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Decision Notice & Finding of No Significant Impact and Environmental Assessment

**Rangeland Allotment Management Planning
on the South Saguache Analysis Area—
California Gulch, Carnero, Cave,
Cottonwood, Houselog, Mill Creek, Pasture,
San Juan Maez, Sawlog, and Tracy Canyon
Cattle & Horse Allotments**

**Saguache Ranger District, Rio Grande National Forest
Saguache County, Colorado**



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Saguache Ranger District, Rio Grande National Forest

Saguache County, Colorado

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This document is available on the internet:
<http://www.fs.fed.us/r2/riogrande/projects>

ABSTRACT

Decision Notice/FONSI – This document discloses the decision to implement alternative 3 (the proposed action), detailing the specifics of authorized livestock grazing on the South Saguache Analysis Area. The Decision Notice/FONSI also documents the rationale for the decision and the findings.

Environmental Assessment – This environmental assessment for comment (EA) is a public document that provides sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI). It reveals the direct, indirect, and cumulative effects of a proposed action and alternative actions for permitted domestic livestock grazing management within the South Saguache Analysis Area.

This document follows the format established in the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations {CFR} §1500-1508). It includes a discussion of the need for the proposal; alternatives to the proposal; the physical, biological, social and economic impacts of the proposed action and alternatives; and a listing of agencies and persons consulted. This EA is tiered to the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the 1996 Revised Land and Resource Management Plan, as amended (Forest Plan) for the Rio Grande National Forest.

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Acronyms/Abbreviations

AMP	Allotment Management Plan
AOI	Annual Operating Instructions
AOSA	Association of Official Seed Analysts
APHIS	Animal and Plant Health Inspection Service
AU	Animal Unit
AUM	Animal Unit Month
BA	Biological Assessment
BCP	Colorado Landbird Conservation Plan
BCR	Bird Conservation Region
BE	Biological Evaluation
BLM	Bureau of Land Management
CDNST	Continental Divide National Scenic Trail
CDOW	Colorado Division of Wildlife
CEQ	Council for Environmental Quality
CFR	Code of Federal Regulations
DN	Decision Notice
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
FONSI	Finding of No Significant Impact
FSH	Forest Service Handbook
FSM	Forest Service Manual
IDT	Interdisciplinary Team
LAU	Lynx Analysis Unit
LTA	Landtype Association
MA	Management Area
MU	Map Unit
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFS	National Forest System
OSHA	Occupational Safety and Health Administration
PNV	Present Net Value
RGNF	Rio Grande National Forest
RNA	Research Natural Area
ROS	Recreation Opportunity Spectrum
SLV	San Luis Valley
SOPA	Schedule of Proposed Actions
SWDPS	Southwestern Wolf Distinct Population Segment
TES	Threatened, Endangered, and Sensitive Species
USC	United States Code
USDA	United States Department of Agriculture
UTM	Universal Transverse Mercator

Summary

The Rio Grande National Forest (RGNF) proposes to continue to permit livestock grazing in the South Saguache Analysis Area, hereafter referred to as the analysis area, under an adaptive-management strategy that would ensure meeting or progressing toward Forest Plan and project-specific desired conditions.

The analysis area is located across the southern portion of the Saguache Ranger District in the RGNF in the northern San Juan Mountain Range and lies entirely within Saguache County. The future livestock management of ten existing cattle and horse (C&H) allotments is being evaluated in this environmental assessment (EA). The affected C&H allotments are: California Gulch, Carnero, Cave, Cottonwood, Houselog, Mill Creek, Pasture, San Juan Maez, Sawlog, and Tracy Canyon.

The need for this action is tied to resolving disparities between the Forest Plan desired conditions and the existing conditions for site-specific areas in the analysis area (within the scope of this analysis—the analysis is limited to evaluating the appropriate level of livestock grazing, given considerations of rangeland condition and other multiple-use goals and objectives). The analysis area is meeting or moving toward the Forest-wide desired conditions with the exception of small localized areas in the analysis area. These areas have been identified as benchmarks or key areas. The proposed action is expected to result in low impacts on the physical, biological, and social environment.

Three alternatives were developed in detail for this EA; each designed to be viable and consistent with Forest Plan direction. Alternatives developed were based on the following themes: (1) no action (no permitted livestock grazing), (2) current management, and (3) adaptive management.

Based on the effects of the alternatives, the responsible official (Saguache District Ranger/Field Manager) would decide whether to authorize some level of livestock grazing on all, part, or none of the analysis area, considering range condition and other multiple-use goals and objectives.

Decision Notice & Finding of No Significant Impact and Environmental Assessment

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Saguache Ranger District, Rio Grande National Forest
Saguache County, Colorado

Introduction

This decision notice (DN) documents my decision and provides rationale for my decision. The attached finding of no significant impact (FONSI) describes the reasons why I determined that this action would not have a significant effect on the human environment and therefore no environmental impact statement would be needed.

The South Saguache Analysis Area (hereafter referred to as the analysis area) Environmental Assessment (EA) is incorporated by reference and is attached. The DN/FONSI documents the following:

- Background description of the analysis area and scope of the analysis;
- My decision and rationale for my decision;
- The alternatives considered;
- The public involvement conducted by the Forest Service;
- The legal requirements for environmental protection;
- A finding of no significant impact;
- The implementation date;
- The rights to appeal and administrative review;
- Contact information; and
- My signature and date, as the responsible official.

The RGNF Land and Resource Management Plan, as amended (hereafter referred to as the Forest Plan) and its accompanying Final Environmental Impact Statement (FEIS) are incorporated by reference in this DN/FONSI. These documents identify livestock grazing as an appropriate use of the Forest and the Forest has delineated areas suitable for livestock grazing. The Forest Plan also describes standards and guidelines for the management of livestock to ensure that livestock grazing is compatible with, or promotes attainment of, desired conditions for physical and biological resources. Livestock grazing is an allowable use of National Forest System (NFS) lands under the multiple-use mandate of the Forest Service (Multiple Use Sustained Yield Act 1960). The EA associated with this DN documents three alternatives (EA, section 2.3) that were analyzed for impacts of livestock grazing on the analysis area landscape. The EA can be obtained at the Saguache Public Lands Field Office (see contact information below).

Background

The analysis area contains approximately 133,658 acres and is entirely in Saguache County. The analysis area is located across the southern portion of the Saguache Ranger District in the RGNF in the Northern San Juan Mountain Range and lies entirely within Saguache County. The future livestock management of ten existing cattle and horse (C&H) allotments is being evaluated in this EA. The affected C&H allotments are: California Gulch, Carnero, Cave, Cottonwood, Houselog, Mill Creek, Pasture, San Juan Maez, Sawlog, and Tracy Canyon. Figure DN-1 below shows the analysis area in context with local communities.

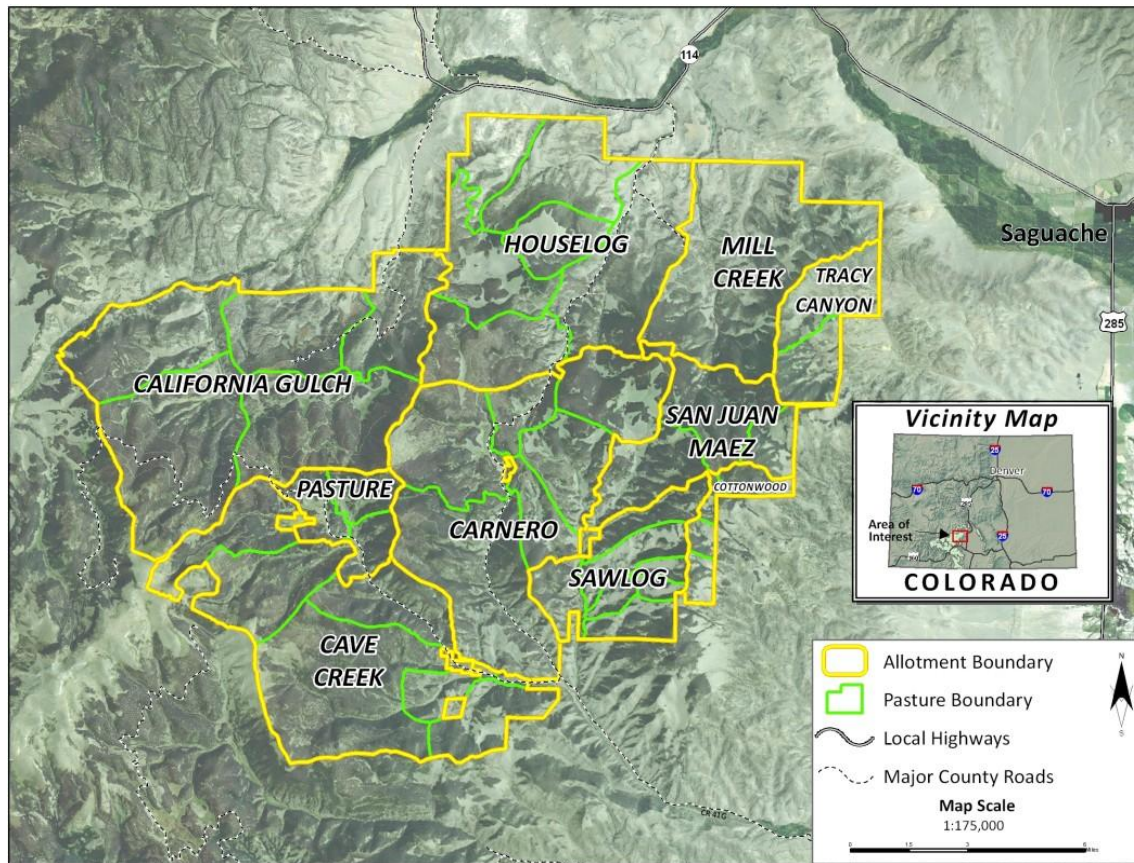


Figure DN-1. The analysis area relative to the RGNF and local communities (rangeland allotments are delineated and labeled within the analysis area)

Purpose and Need

The scope of this analysis was limited to evaluating the appropriate level of permitted livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives. The proposed action is to continue to permit livestock grazing within the analysis area under an adaptive management strategy that would meet or move toward Forest Plan desired conditions and project-specific desired conditions (EA, section 1.5).

The analysis did not address management of recreation livestock, animals authorized under livestock use permits where the primary purpose is not livestock production, or outfitter and guide livestock.

Decision

I have decided to select alternative 3 for implementation. My decision is based on the EA completed for this project, Forest Plan direction, as well as comments received from scoping and the 30-day public review of the EA. Alternative 3 allows permitted livestock grazing under an adaptive livestock grazing management strategy and includes the constraints and requirements listed in table DN-1.

Table DN-1. Constraints and requirements identified for allowing permitted livestock grazing under an adaptive management alternative

Allotments	All allotments in the analysis area will be active.
Grazing System	The grazing system would be flexible and could be readily modified to respond to biological, physical, and social needs within the constraints of the Forest Plan and this decision.
Kind of Animals	The kind of livestock would be constrained to cattle only.
Class of Animals	The class of livestock would be constrained to cows, calves, bulls and yearlings.
Season	The grazing season would be flexible, but would be constrained by the dates presented in section 2.6. The AUM capacity ¹ would not be exceeded for the analysis area.
Livestock Numbers	Livestock numbers would be flexible and could vary from season to season within the estimated carrying capacity for the analysis area. The estimated carrying capacity for the analysis area is 6 suitable acres per AUM ² . Livestock numbers would be limited to available forage and subject to Forest Plan standard and guidelines. The site-specific AUM capacity would depend on the intensity of the management being applied, desired conditions, weather, and other multi-use resource considerations.
Project Design Criteria	All project design criteria listed for alternative 3 (EA, section 2.5) are required and incorporated into my decision.
Monitoring	Implementation and effectiveness monitoring identified in the EA chapter 2 section 2.9 are required and incorporated into my decision.

¹ Livestock grazing carrying capacity is based on historical stocking rates and site-specific project design criteria (section 2.5). Carrying capacity should be based on impacts of historical and current stocking rates, grazing management, and weather. Adjustments in carrying capacity should be made through monitoring over time to ensure progress toward desired resource conditions (Position statement on grazing capacity adopted by the Society for Range Management, February 1999).

² Estimate based on landscape scale geographical information system (GIS) modeling analyses (USDA Forest Service 2003).

Rationale for the Decision

I made my decision based on the best science and information available. In making this decision, I carefully considered applicable laws, regulations, and policy; and the information disclosed in the EA, the Forest Plan, and the project's administrative record. I considered how the alternatives in the EA met the stated purpose of and need for action, and how they addressed the key issues. I also considered how the alternatives in the EA met the goals and objectives in the Forest Plan. Finally, I carefully considered public, tribal, and State and other Federal agencies' comments.

1. The Purpose of and the Need for Action (EA, sections 1.4 and 1.5).

The purpose of this action is to provide forage for permitted domestic livestock grazing in a manner that maintains or moves conditions toward achieving Forest Plan objectives and desired conditions. Providing forage for permitted domestic livestock is desirable in this analysis area based on the following:

- Where consistent with other Forest Plan goals and objectives, Congressional intent is to allow livestock grazing on suitable lands (Multiple-Use Sustained-Yield Act of 1960;

Forest and Rangeland Renewable Resources Planning Act of 1974; Federal Land Policy and Management Act of 1976; and National Forest Management Act of 1976).

- The analysis area contains lands identified as suitable for domestic livestock grazing in the Forest Plan, and continued domestic livestock grazing is consistent with the goals, objectives, standards, and guidelines of the Forest Plan (Forest Plan, chapters I, II, and III).
- It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for livestock grazing consistent with land management plans (36 CFR §222.2 (c); and Forest Service Manual [FSM] 2203.1).
- It is Forest Service policy to continue contributions to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on rangeland resources for their livelihood (FSM 2202.1; and Forest Plan, pages II-4 through II-6).
- An objective of the Forest Plan is to: “Supply ample forage to sustain wildlife and permitted-livestock populations without damaging range condition” (Forest Plan, page II-2).

Livestock grazing is a discretionary action by the Forest Service and there is an overall need to analyze the possible effects in order to continue or modify the grazing authorization. There is an overall need for greater management flexibility to cope with fluctuations in environmental and social conditions.

More specifically, the need for this action is tied to resource, social, and/or economic disparity identified by the interdisciplinary (ID) Team and responsible officer when comparing the existing condition in the analysis area to the Forest Plan desired conditions on a site-specific basis. The need for action is further defined by the scope of the analysis.

The ID Team reviewed each of the Forest-wide desired conditions from the Forest Plan relative to this analysis area to identify if a change in livestock management was needed. The result of this analysis is displayed in the EA in chapter 1, table 1.5-1. The analysis area was found to be meeting Forest-wide desired conditions with the exception of isolated sites within specific allotments. These site-specific areas have been identified as benchmarks within each allotment. The benchmarks often represent areas where there are identified disparities between the Forest Plan desired conditions and the existing conditions. However, in allotments where no disparities were identified, benchmarks have also been established so that monitoring can be used to determine if management actions continue to meet desired conditions. Benchmark locations, existing and desired conditions, and need for action (within the scope of this analysis) are identified by allotment in the EA, section 1.5, table 1.5-3 and are mapped in appendix B.

Alternative 1 does not fully comply with the purpose of and need for action since it discontinues livestock grazing. There is congressional intent to allow livestock grazing on suitable rangelands where consistent with the Forest Plan. It is Forest Service policy to continue contributions to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on rangeland resources for their livelihood. An objective of the Forest Plan is to supply ample forage to sustain wildlife and permitted livestock populations without damaging range condition. Alternative 1 forgoes these opportunities. Furthermore, alternative 1 does not fully address the Forest Plan desired conditions for Rural Development (Forest Plan, page I-6). This alternative would be expected to

have the most negative effect on the local social and economic conditions due to the cancellation of ten existing term grazing permits.

In contrast, both action alternatives continue livestock grazing and would fulfill the purpose of and need for action. Alternative 2 generally meets the stated purpose of and need for action, but it does not provide the management flexibility I need to efficiently and effectively make management decisions. Alternative 2 limits my ability to effectively adapt management to changing environmental and social conditions and resource needs. It limits options available to address and better resolve riparian area health issues, user conflict interactions, and other unforeseen resource issues. My management flexibility is relatively constrained under alternative 2 compared to alternative 3.

Alternative 3 best meets the stated purpose of and need for action by providing greater management flexibility to cope with fluctuations in environmental and social conditions including, but not limited to, annual changes in weather; to be responsive to visitor-use pattern changes; to be responsive to permittee requests for reasonable operational adjustments; and to effectively make management decisions in response to resource needs. Alternative 3 gives me the flexibility I need to quickly and most efficiently address and better resolve riparian area health issues, user conflict interactions, and other resource concerns. Alternative 3 provides me the flexibility to rapidly adjust management, infrastructure, stocking rates, on/off dates, pasture rotations, and herd combinations to maintain or move conditions toward Forest Plan desired conditions while contributing to the economic and social well-being of local communities.

2. The goals, objectives, and desired conditions for the analysis area as described in the Forest Plan for the Rio Grande National Forest (EA, sections 1.4, 1.5, 1.6)

The Forest Plan contains goals and objectives to allow livestock grazing on suitable rangelands and the analysis area contains lands suitable for livestock grazing. It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for livestock grazing consistent with the Forest Plan. An objective of the Forest Plan is to supply ample forage to sustain wildlife and permitted livestock populations without damaging the range resource. Forest Service policy is to continue contributions to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on rangeland resources for their livelihood.

The need for this action was tied to any important resource, social, or economic disparity that was found when comparing the existing condition in the analysis area to the Forest Plan desired conditions, as determined by the ID Team and authorized officer on a site-specific basis. The need for action was further defined by the scope of the analysis (i.e., the analysis was limited to evaluating the appropriate level of livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives). The ID Team reviewed each of the Forest-wide desired conditions from the Forest Plan relative to this analysis area to determine if a change in livestock management was needed. The ID Team determined that the analysis area was meeting or moving toward the Forest-wide desired conditions with the exception of localized areas that were judged to have important disparities between Forest Plan desired conditions and existing conditions (EA, table 1.5-3).

I find that alternative 1 does not fully meet the Forest Plan goals and objectives relative to livestock grazing. This alternative does not meet the Forest Plan desired conditions for rural development.

Alternative 2 mostly meets the Forest Plan goals and objectives relative to livestock grazing, but it does not provide me the decision-making flexibility to optimally and efficiently manage the resource. Alternative 2 limits my ability to effectively address and better resolve riparian area health issues, user conflict interactions, and other resource concerns in a timely way.

Alternative 3 provides me with the best opportunity to address any disparities between Forest Plan desired conditions and existing conditions and the need for action items in the most efficient timeframe. Alternative 3 gives me the most decision-making flexibility to quickly address and resolve riparian area health concerns, user conflict interactions, and other resource concerns as they arise. Alternative 3 provides me with the flexibility to adjust management (i.e., livestock numbers, season, grazing rotation, etc.) to maintain or move conditions toward Forest Plan desired conditions while contributing to the economic and social well-being of local communities.

3. The laws, regulations, and policies that govern land management on national forests (EA, section 1.6)

It is Forest Service policy to conduct its operations in a manner that ensures the protection of public health, safety, and the environment through compliance with all applicable Federal and State laws, regulations, orders, and other requirements. The EA considered whether actions described under its alternatives would result in a violation of any Federal, State, or local laws or requirements (40 Code of Federal Regulations [CFR] §1508.27), or would require a permit, license, or other entitlement (40 CFR §1502.25). By tiering this project to the FEIS and Record of Decision (ROD) for the Forest Plan, all applicable requirements would be met. Also, see the “Legal Requirements for Environmental Protection” topic presented later in this DN/FONSI for more information.

Alternative 1 does not fully comply with Forest Plan goals, objectives, and desired conditions for the reasons stated in items 1 and 2 above. The action alternatives are expected to comply with applicable laws, regulations, and policy on the national forest. Alternative 3 will provide me the most flexibility to adjust management, as needed, to ensure compliance with the direction in the Forest Plan.

4. Key issues (EA, section 1.9)

The ID Team used scoping comments from the public, tribes, State, and other Federal agencies to identify key issues to be analyzed with the proposed action. Three key issues were identified for this analysis area. The following is a brief summary of how the alternatives responded to each key issue (EA, section 3.3).

Alternative 1 – No Action (No Permitted Livestock Grazing)

Key Issue 1: Management flexibility – Alternative 1 limits management flexibility by removing livestock as a management tool. This would be an inflexible management scenario for the Forest Service. The ability to respond to annual changes in biological, physical, and social changes/desires relative to permitted livestock grazing would not exist.

Key Issue 2: Riparian area health – There would be no permitted livestock grazing; therefore, any negative impacts to riparian area health due to livestock grazing would be eliminated. Riparian areas where livestock impacts limit riparian health would move toward desired conditions.

Key Issue 3: Net economic value of livestock grazing – Present net value (a measure of economic efficiency) is negative (-\$46,900) since there would be no net revenue, but there would still be Forest Service administrative costs tied to managing lands, and improvements in the analysis area (see section 3.18). Improvements not maintained would be removed from the analysis area. There may be long-term impacts on individual families within the communities who depend on the existing livestock operations to provide a livelihood.

Overall, alternative 1 is not fully in compliance with the Forest Plan since it does not address the desired conditions for Rural Development (Forest Plan, page I-6). There is no management flexibility under this alternative. It also does not fully meet the stated purpose of and need for action (EA, sections 1.4 and 1.5).

Alternative 2 – Current Livestock Grazing Management (as applied on-the-ground over the past 3 to 5 years)

Key Issue 1: Management flexibility – There would be limited management flexibility since the ability of the Forest Service to change the grazing system, season of use, and permitted livestock numbers would be somewhat unresponsive to annual changes in biological, physical, and social changes. Annual changes made in the annual operating instructions (AOI) would generally be by exception. The kind and class of permitted livestock would be constrained to cattle.

Key Issue 2: Riparian area health – There would be minimal control of permitted livestock use in riparian areas. Previously established moderate to heavy use patterns in key riparian areas may tend to continue. Achievement of desired conditions would likely occur at a slow rate. Minor modifications to grazing practices could be made, by exception, in the AOI.

Key Issue 3: Net economic value of livestock grazing – Present net value is positive (\$274,600) since present value benefits exceed present value costs (see section 3.18). This alternative has the highest present net value as a result of implementing no new improvements or increased monitoring and operational costs. There are no local economic effects predicted, since there would be no impact on the affected permittees (and thus no impact on local communities).

Overall, alternative 2 is consistent with the Forest Plan, but only partially meets the stated purpose of and need for action (EA, sections 1.4 and 1.5). The management flexibility that I need to effectively manage the analysis area is considerably less under this alternative than under alternative 3. Previously established moderate to heavy use patterns in key riparian areas may tend to continue and would likely hinder achieving desired conditions in acceptable timeframes.

Alternative 3 – Adaptive Livestock Grazing Management (selected alternative)

Key Issue 1 Management flexibility – Alternative 3 provides a high degree of management flexibility. It provides me the ability to change the grazing system, infrastructure, season of use, and permitted livestock numbers in response to annual changes in biological, physical, and social changes. If monitoring indicates that the Forest Plan desired conditions are not being achieved, then I can quickly implement another adaptive management action (or any other applicable tool or strategy available within the scope of this EA; see EA, table 2.4-4). The kind and class of permitted livestock would be constrained to cattle.

Key Issue 2 Riparian area health – There would be a greater degree of control of permitted livestock use in riparian areas. Management options would be more readily available for immediate use or implementation. Riparian conditions would likely trend upward more quickly

than current management due to more responsive management. If monitoring indicated that the Forest Plan desired conditions were not being met, or allowable use standards were regularly exceeded, then the Forest Service could immediately implement management, or a combination of adaptive management actions (or any other applicable tool or strategy available within the scope of this EAI see table 2.4-4). Adaptive management would also likely prevent future degradation allowing the Forest Service to be increasingly proactive.

Key Issue 3 Net economic value of livestock grazing – Present net value (a measure of economic efficiency) is negative (-\$138,500) since present value costs exceed present value benefits (see section 3.18). This alternative has a lower present net value than alternative 2 because Forest Service and permittee administration and monitoring costs would be higher and the full suite of proposed adaptive options were analyzed. However, it is unlikely that the full suite of proposed adaptive management options would be needed. Adaptive management would require allotments to be managed more actively than alternative 2, most likely at a greater cost to the permittee. This alternative supports the local economic value provided by livestock grazing.

Overall, I find that alternative 3 is consistent with the Forest Plan and best meets the stated purpose of and need for action (EA, sections 1.4 and 1.5). Alternative 3 most effectively addresses the key issues and it provides the greatest degree of flexibility to efficiently manage the analysis area and is expected to be the most effective to achieve desired conditions. Alternative 3 is most costly when PNV is considered, but it is unlikely that the full suite of adaptive management options will be needed as analyzed, thus lowering the cost. In addition, the local economics will likely benefit from the intrinsic values achieved through improved riparian conditions and overall land health.

5. Site-specific resource information and the potential environmental, social, and economic effects (EA, chapter 3)

The EA described the present conditions of the environment in and around the analysis area. It also disclosed the probable consequences (impacts and effects) of implementing each alternative (EA, section 2.3) on selected environmental resources (chapter 3). It provided the analytical basis to compare the alternatives.

This project is local and would affect only the analysis area, which contains approximately 133,658 total acres. The scope of this analysis is limited to evaluating the appropriate level of permitted livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives (EA, section 1.2). Livestock grazing has occurred in this analysis area since the late 1800s (EA, section 3.4).

Alternative 1 can be implemented without significant additional adverse effects on economic, cultural, and natural resources as documented in the EA (see all of chapter 3; also specifically section 3.20 for cumulative effects). However, alternative 1 does not fully meet the Forest Plan goals and objectives relative to livestock grazing and it does not fully address the desired conditions for Rural Development (Forest Plan, page I-6). Alternative 1 would be expected to have the greatest degree of cumulative effects and the greatest overall impact. Alternative 1 eliminates an important component of the local economy due to the cancellation of ten term grazing permits. Additionally, without grazing permits, many ranching operations may not be economically viable and subdivision of private lands might occur. The net result would be increased fragmentation of wildlife and native plant habitat, loss of access to public lands, and increased operating costs to counties.

The action alternatives can be implemented without significant adverse effects on economic, cultural, and natural resources as documented in the EA. There are no expected significant adverse effects on vegetation (section 3.4 and 3.8), soils (section 3.7), water (section 3.6), air (section 3.19), wildlife (section 3.9, 3.10), fisheries (section 3.13), recreation (section 3.5), economics (section 3.18), scenic resources (section 3.14), heritage resources (section 3.15), and people (section 3.18, 3.20, and appendix F) due to an extensive list of project design criteria (EA, section 2.5) and monitoring measures that provide feedback for management change, as needed (EA, section 2.9). Thus, the action alternatives will not affect either the short-term or long-term productivity of the RGNF, in terms of sustainability of the resources or outputs associated with them. There are no effects related to civil rights because consideration of permitted livestock grazing has no effect on rights protected under civil rights law (EA, section 3.18).

Overall, I find that the selected alternative has no significant resource or social impacts (EA, chapter 3). Furthermore, there are no significant adverse cumulative effects expected (EA, section 3.20). The management flexibility inherent to adaptive livestock grazing management will provide me with management options to most effectively and efficiently meet or move the analysis area toward Forest Plan desired conditions. The project design criteria for alternative 3 expand upon the project design criteria for alternative 2 and were specifically designed to additionally minimize resource impacts on wildlife, recreation visitors, and other resource impacts (EA, section 2.5).

6. Comments made by the public and other agencies (EA, chapter 6)

The RGNF invited public comment and participation regarding this project through scoping and a formal comment period. An EA for comment was released for a 30-day review by the public, tribes, and State and Federal agencies on July 13, 2010.

Four letters of comment were received via e-mail. All letters were reviewed by the ID Team and considered in the development of the final EA; these letters are included in chapter 6 (and are included in the administrative record for this project).

7. Summary of Decision Rationale

Alternative 1 is not fully in compliance with the Forest Plan since it does not address the desired conditions for Rural Development (Forest Plan, page I-6). There is no management flexibility under this alternative. It also does not fully meet the stated purpose of and need for action (EA, sections 1.4 and 1.5).

Alternative 2 is consistent with the Forest Plan, but only partially meets the stated purpose of and need for action (EA, sections 1.4 and 1.5). The management flexibility that I need to effectively and efficiently manage the analysis area is considerably less under this alternative than the selected alternative. Previously established moderate to heavy use patterns in key riparian areas may tend to continue and may delay achievement of desired conditions.

Alternative 3 is consistent with the Forest Plan and it best meets the stated purpose of and need for action (EA, sections 1.4 and 1.5). Adaptive management affords me the management flexibility that I need to most effectively and efficiently manage the analysis area. This alternative gives me the most management options to achieve desired conditions throughout the analysis area in the most time effective manner.

I considered all relevant public, agency, and tribal comment to this project. I considered Forest Plan direction and concerns for recreation, wildlife, permittee requirements, and many other matters. I find alternative 3 gives me the management flexibility I need to address these concerns and affords me the opportunity to adapt livestock management, as appropriate, to changes as they arise in the future. Management flexibility is absolutely essential to effectively manage the analysis area. Alternative 3 best satisfies the concerns of the public while meeting our stated purpose of and need for action (EA, sections 1.4 and 1.5). I am cognizant that the public is not unified in accepting livestock grazing on NFS lands; however, alternative 3 satisfies our Forest Plan's desire to provide forage for permitted livestock without compromising rangeland condition, and can be done in a manner that is compatible with the many other important values in this area.

Legal Requirements for Environmental Protection

The selected alternative is consistent with all applicable Federal, State, and local laws and requirements for the protection of the environment. The selected alternative is also consistent with the Forest Plan for the RGNF (EA, sections 1.1 and 1.6).

National Environmental Policy Act (NEPA). My decision and the EA analysis comply with NEPA. Direction in 40 CFR §1500-1508, 36 CFR §220, Forest Service Manual (FSM) 1950 and Forest Service Handbook (FSH) 1909.15 was followed throughout the development of this EA and the project.

National Forest Management Act (NFMA). This project and my decision comply with the NFMA and the Forest Plan. The NFMA and its implementing regulations govern national forest management planning through Forest-level planning.

I have evaluated the selected alternative and compared it to the Forest Plan, as amended, to determine if the selected alternative is in compliance with the Forest-wide goals, objectives, desired conditions, and standards and guidelines. I have also evaluated the selected alternative and compared it to the management areas within the analysis area to determine compliance with those desired conditions and standards and guidelines. I find that the selected alternative is consistent with the Forest Plan. The Forest Plan standards and guidelines are included in the project design criteria and have been incorporated into the selected alternative by my decision. I have determined that the selected alternative will meet Forest Plan standards and guidelines, and will contribute toward reaching Forest Plan goals, objectives, and desired conditions.

It should be noted that the 1982 planning rule has been superseded and is no longer in effect. There is a transition provision under the 2008 planning rule that allows use of the provisions of the former (1982) planning rule (per 36 CFR §219.14). However, the transition provision applies only to forest plan amendments or revisions and does not apply to authorization of projects implementing a forest plan (note: 36 CFR §219.2(c) indicates that no provisions of the rule apply to projects unless otherwise noted). Thus, the NFMA requirement for approving a project decision is simply to determine that the project will be consistent with the Forest Plan (16 U.S.C. 1604; 36 CFR §219.8(e) (2008)).

The Forest Plan Management Indicator Species (MIS) Amendment of October 2003 added MIS monitoring to the Forest Plan Monitoring and Evaluation Strategy. The MIS Amendment made MIS-related changes to Forest-wide standards and guidelines and made changes to the Monitoring and Evaluation Strategy (to chapter V, monitoring table V-1). The MIS Amendment added MIS to the biodiversity viability fine-filter monitoring for species change of occurrence at

the Forest level. The amended Forest Plan provides specific monitoring provisions for the Forest MIS. The Forest Plan contains no obligation to conduct MIS monitoring or surveying within a proposed project area, although project data can be used to support the Forest MIS monitoring. The EA evaluates MIS in chapter 3, section 3.11. The Forest is implementing its Forest Plan Monitoring and Evaluation Strategy, which is documented in annual reports incorporated here by reference. This project is consistent with the requirements of the Forest Plan, as amended, and therefore is also consistent with the NFMA.

Endangered Species Act (ESA). Under provisions of the ESA, Federal agencies are directed to seek to conserve threatened and endangered species and to ensure that their actions are not likely to jeopardize the continued existence of any of these species. I have complied with all applicable Federal laws and regulations and consulted with the U.S. Fish and Wildlife Service, where it was appropriate to do so. I have considered the effects of this project and complied with relevant Forest Service regulations and policies. Effects of the selected alternative on all listed threatened and endangered species relevant to this analysis area were analyzed in a biological assessment (BA) (project record) and summarized in the EA (sections 3.8 and 3.9).

Migratory Bird Treaty Act (MBTA) and Executive Order 13186. The selected alternative was evaluated against Forest Plan standards and guidelines, and project design criteria, to ensure consistency and to eliminate or reduce potential adverse effects to migratory birds. As a result, direct, indirect, and cumulative effects of the selected alternative would not be expected to adversely affect identified birds of conservation concern, and would be consistent with the MBTA, Executive Order 13186, Forest Service standards and guidelines, and Colorado Landbird Conservation Plan (BCP) goals and objectives to conserve migratory and resident birds in Colorado (EA, section 3.12).

Clean Air Act (CAA). The basic framework for controlling air pollutants in the United States is the 1970 Clean Air Act (CAA), as amended in 1990 and 1999 (42 USC 7401 et seq.) The CAA was designed to protect and enhance the quality of the Nation's air resources. All national ambient air quality standards are being met in the analysis area and in the surrounding area. The selected alternative is not expected to impact air quality. The selected alternative is consistent with and complies with the Clean Air Act (EA, section 3.19).

Clean Water Act. The Clean Water Act requires that chemical, physical, and biological integrity of all waters, stream channels, and wetlands be protected. Implementation of Forest Plan standards and guidelines are normally expected to provide that protection. All streams within the analysis area are currently meeting water quality standards for the designated uses and, therefore, are not on the State of Colorado 303(d) Impaired Waters List (EA, section 3.6). The selected alternative is consistent with the Clean Water Act.

National Historic Preservation Act. Heritage and tribal interests are regulated by Federal laws that direct and guide the Forest Service in identifying, evaluating, and protecting heritage resources. The selected alternative complies with these Federal laws. Heritage resources within the analysis area were considered during project development. The analysis for heritage resources focused on the areas of potential effect (APEs) identified by range and heritage personnel. These encompass the overlap areas of where livestock congregate and areas of high heritage site probability. The APE data for heritage resources is drawn from a summation of archival records, site visits, and a class III heritage resource inventory conducted in 2008 and 2009. Literature and field reviews reveal that eligible and unevaluated heritage resources are present within the analysis area. The Colorado State Historical Preservation Officer concurred

with the Forest Service's no adverse effect determination to the eligible and unevaluated properties on July 30, 2010 (CHS#57658) (EA, section 3.15).

Native American Tribal consultation for this project was conducted through the Tribal Consultation Bulletin (3/4/2009) of the RGNF. Consultation found that there were no known sacred areas or traditional cultural properties within the analysis area; thus, the selected alternative will create no adverse impacts.

Environmental Justice (Executive Order 12898). Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," requires that Federal agencies make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of their programs, policies, and activities on minority populations and low income populations. No minority or low income populations were identified during scoping (internal or external) or during the analysis that might be adversely affected by the activities (see EA, chapter 3, section 3.18). Based on the EA analysis, my conclusion is that there would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result implementing the selected alternative. The selected alternative does not pose any significant socio-economic risks that disproportionately affect low income or minority populations in communities potentially affected by the alternative.

Roadless Area Conservation Rule. The selected alternative complies with the State Petitions for Inventoried Roadless Area Management (36 CFR §294 subpart B, May 13, 2005) because no timber harvest, road construction, or reconstruction is approved within inventoried roadless areas on the RGNF.

Finding of No Significant Impact (FONSI)

I have reviewed the environmental effects of the selected alternative disclosed in the EA. I have also evaluated whether the selected alternative constitutes a significant impact on the quality of the human environment or whether the environmental impacts would be significant based on their context and intensity, as defined by the National Environmental Policy Act (NEPA) using the criteria in the implementing regulations (40 CFR §1508.27).

I have determined that the implementation of the selected alternative will not result in any anticipated effects that exceed the level at which a significant effect on the human, biological, or physical environment in terms of context or intensity would occur. Both beneficial and adverse effects have been considered. The effects from the selected alternative are expected to be minor. The effects are not highly uncertain and do not involve unique and unknown risks. The action will not, in relation with other actions, cause cumulatively significant impacts. I have reviewed the actions from alternative 3 in terms of both context and intensity in detail below:

1. Context: This project is local and would affect only the analysis area, which contains approximately 133,658 total acres. The scope of this analysis is limited to evaluating the appropriate level of permitted livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives (EA, section 1.2). Suitable rangelands for under the selected alternative are 31,432 acres (24 percent of the total analysis area). Livestock grazing has occurred in the analysis area since the late 1800s (EA, section 3.4).

2. Intensity: Severity of projected impacts is subdivided into several individual components, as suggested by 40 CFR §1508.27 as follows:

- Environmental Effects: The selected alternative can be implemented without significant adverse effects on economic, cultural, and natural resources as documented in the EA (see all of chapter 3; also specifically section 3.20 for cumulative effects). There are no expected significant adverse effects on vegetation (section 3.4 and 3.8), soils (section 3.7), water (section 3.6), air (section 3.19), wildlife (section 3.9, 3.10), fisheries (section 3.13), recreation (section 3.5), economics (section 3.18), scenic resources (section 3.14), heritage resources (section 3.15), and people (section 3.18 and appendix F) due to project design criteria (EA, section 2.5) and monitoring measures (EA, section 2.9 and appendix D). Thus, the selected alternative will not affect either the short-term or long-term productivity of the RGNF, in terms of sustainability of the resources or outputs associated with them. There are no effects related to civil rights because consideration of permitted livestock grazing has no effect on rights protected under civil rights law (EA, section 3.19).
- Public Health and Safety: There are no adverse effects expected to public health or safety under alternative 3 (EA, section 3.19). The project activities will comply with all State and Federal regulations (EA, section 1.6). Air (EA, section 3.19) and water quality (EA, section 3.6) will not be adversely affected.
- Unique Characteristics of the Area: There are no significant adverse effects on unique characteristics of the RGNF (see EA, chapter 3), such as historic or cultural resources (section 3.15), parklands (section 3.19), prime farmlands (section 3.19), wetlands (section 3.6), floodplains (section 3.6), wild and scenic rivers (section 3.5), inventoried roadless areas (section 3.19), or ecologically critical areas (section 3.19). The selected alternative will have no adverse effect on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places, and there is no loss of significant scientific, cultural, or historical resources (section 3.15).
- Controversy: While some aspects of livestock grazing tend to be somewhat socially controversial, the effects of the selected alternative on the human environment are not scientifically controversial (EA, Chapter 3). No new or unusual methods or activities are proposed. The effects on the human environment are not highly uncertain, are very unlikely to involve unique or unknown risks, and are not likely to be highly controversial because there is no scientific controversy on the impacts of the project (EA, section 3.19).
- Uncertainty: The effects analysis shows the effects are not uncertain, and do not involve unique or unknown risk (EA, chapter 3). Similar actions have been implemented within the RGNF and in other areas in the West. Monitoring will ensure effects are within the expected parameters (EA, section 2.9 and appendix D).
- Precedent: The action is not likely to establish a precedent for future actions with significant effects (EA, sections 3.19 and 3.20). The action does not represent a decision in principle about future considerations (EA, sections 3.19 and 3.20). Similar projects conducted in the future will have to be evaluated under NEPA for the significance of the effects of those specific actions.
- Cumulative Impact: The cumulative impacts are not significant because this activity, when considered with other past or reasonably foreseeable actions, is not expected to have a cumulatively significant impact (EA, section 3.20).
- Properties on or Eligible for the National Register of Historic Places: The action will have no adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. The action will not cause

loss or destruction of significant scientific, cultural, or historical resources (EA, section 3.15).

- Endangered or Threatened Species: The action will not adversely affect any federally listed or proposed endangered or threatened species or Forest Service listed sensitive species or their critical habitat. Biological assessments (BA) and biological evaluations (BE) were completed for this project (for animals and plants). The BA determined that the proposed action will have “no effect” on the Federally listed species except Canada lynx and southwestern willow flycatcher where a determination of “may affect, not likely to adversely affect” was made for the selected alternative (EA, section 3.9, table 3.9-1). A determination of “not likely to jeopardize” was made for the mountain plover. A determination for Forest Service-designated sensitive species for the selected alternative found that there will be no trend towards Federal listing or loss of viability in the planning area (for animals, EA, section 3.9, table 3.9-2; for plants, EA, section 3.8, table 3.8-1). The BAs and BEs are part of the project administrative record. In addition, a management indicator species (MIS) analysis for this project was completed and determined that the proposed action and its relationship to MIS species and the habitat types they represent, is not expected to impact the viability of these species in the future nor will it cause a significant population shift or significant change in population numbers within the planning area or Forest as a whole (EA, section 3.10).

The actions from alternative 3 are in compliance with all Federal, State, and local environmental protection laws. Based on the EA and the above considerations, I conclude that the selected alternative is not a major action and it will not constitute a significant effect on the human environment. Therefore, it does not require the preparation of an environmental impact statement.

Implementation

Once a decision is made, term grazing permits, allotment management plans (AMPs), and annual operating instructions (AOIs) may be issued provided that they are in compliance with this NEPA-based decision. These instruments are simply implementing documents and do not constitute decision points. Implementation of the decision is discussed in the EA, chapter 1, section 1.7.

Pursuant to 36 CFR Part 215, if no appeal is filed within the 45-day time period, implementation of this decision may occur on, but not before, five business days from the close of the appeal filing period. If an appeal is received, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition.

Pursuant to 36 CFR Part 251 subpart C, if no appeal is filed, implementation of this decision may occur on, but not before, five business days from the close of the appeal filing period. If an appeal is received, implementation may occur during the appeal process, unless the reviewing officer grants a stay (§251.91).

Administrative Review or Appeal Opportunities

This decision is subject to administrative review (appeal) pursuant to Federal regulations at 36 CFR Part 215. This decision is also subject to administrative review under Federal regulations at 36 CFR part 251 subpart C by term grazing permit holders or applicants (§251.86). However, term grazing permit holders or applicants must choose to appeal under either 36 CFR §251 or §215, but not both (§251.85).

Notices of appeal that do not meet the content requirements of 36 CFR §215.14 or 36 CFR §251.90, as appropriate, will be dismissed.

Appeals Filed Under 36 CFR Part 215

Appeals filed under 36 CFR, part 215, must be submitted (by regular mail) to: USDA Forest Service Region 2, Appeals Deciding Officer, 740 Simms Street, Golden, Colorado 80401; or (by fax) to: 303-275-5134; hand-delivery or express delivery is to: 740 Simms Street, Golden, Colorado. The office business hours for those submitting hand-delivered appeals are 8:00 a.m. through 5:00 p.m. Monday through Friday, excluding holidays. Electronic appeals must be submitted in a format such as an email message, rich text format (.rtf), or Word (.doc) to appeals-rocky-mountain-regional-office@fs.fed.us. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification.

Appeals, including attachments, must be filed within 45 days from the publication date of this notice in the *Valley Courier*, the newspaper of record. Attachments received after the 45-day appeal period will not be considered. The publication date in the *Valley Courier* is the exclusive means for calculating the time to file an appeal. Those wishing to appeal this decision should not rely upon dates or timeframe information provided by any other source.

To be eligible to appeal this decision on this project, an individual or group must have provided a comment or otherwise expressed interest in this project by the close of the comment period. The notice of appeal must meet the appeal content requirements at 36 CFR 215.14.

Appeals Filed Under 36 CFR Part 251 Subpart C

Appeals filed under 36 CFR part 251, subpart C (including attachments) must be in writing and submitted (by regular mail) to: USDA Forest Service, Rio Grande National Forest, Appeal Reviewing Officer, Rio Grande National Forest Supervisor's Office, 1803 West Highway 160, Monte Vista, Colorado 81144; or by fax to: 719-852-6250. Appeals may also be hand or express delivered to the address shown above. Office business hours for those submitting hand-delivered appeals are 8:00 a.m. through 4:30 p.m. Monday through Friday, excluding holidays.

Appeals must be filed within 45 days following the date on the notice of the written decision (§251.88). Attachments received after the 45-day appeal period will not be considered.

Appeals filed under 36 CFR 251, subpart C must have a copy of the appeal simultaneously sent to the Deciding Officer (§251.88) at: Deciding Officer, Saguache Ranger District, Rio Grande National Forest; Attention: Andrew Archuleta, District Ranger/Field Manager, 46525 State Highway 114, Saguache, Colorado 81149; or fax: 719-655-2502.

It is an appellant's responsibility to provide sufficient activity-specific evidence and rationale, focusing on the decision, to show why the Deciding Officer's decision should be reversed (§251.90). The Deciding Officer is willing to meet with applicants and holders to hear and discuss any concerns or issues related to the decision (§251.93).

An appellant may also include in the notice of appeal a request for oral presentation (§251.97) or a request for stay of implementation of the decision pending decision on the appeal (§251.91).

Contact Information

For further information on this project and implementation; contact Lisa VanAmburg, Interdisciplinary Team Leader, Rio Grande National Forest, 46525 State Highway 114, Saguache, Colorado 81149; telephone 719-655-6114. The EA, DN/FONSI, and supporting documents are available for inspection during regular business hours (Monday through Friday 8:00 a.m. to 4:30 p.m.) at the Saguache Ranger District; 46525 State Highway 114, Saguache, Colorado. The EA and DN/FONSI are also posted on the Rio Grande National Forest website as follows: **<http://www.fs.fed.us/r2/riogrande/projects>**

Signature and Date

I have been delegated the authority and I am the Responsible Official for the decisions outlined in this DN/FONSI. Note that in many cases this DN/FONSI summarizes information described more completely in the accompanying EA. For more detailed information, please refer to the EA and its associated project administrative record.

ANDREW ARCHULETA
District Ranger/Field Manager
Saguache Ranger District
Rio Grande National Forest

Date

Chapter 1.0 Purpose of and Need for Action

1.1 Introduction and Background

The Forest Service has prepared this environmental assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the possible direct, indirect, and cumulative environmental impacts that may result from the proposed action and alternatives to the proposed action. It provides the responsible official with the information necessary to make an informed decision. The decision will be documented in a decision notice accompanying the final EA after receiving and considering public comment.

This chapter describes the area and scope, the purpose of and need for action, the proposed action, direction from the RGNF Revised Land and Resource Management Plan, as amended (hereafter referred to as the Forest Plan [USDA Forest Service 1996a]), the decisions to be made, public involvement, the key issues associated with the proposed action, and other environmental and social concerns.

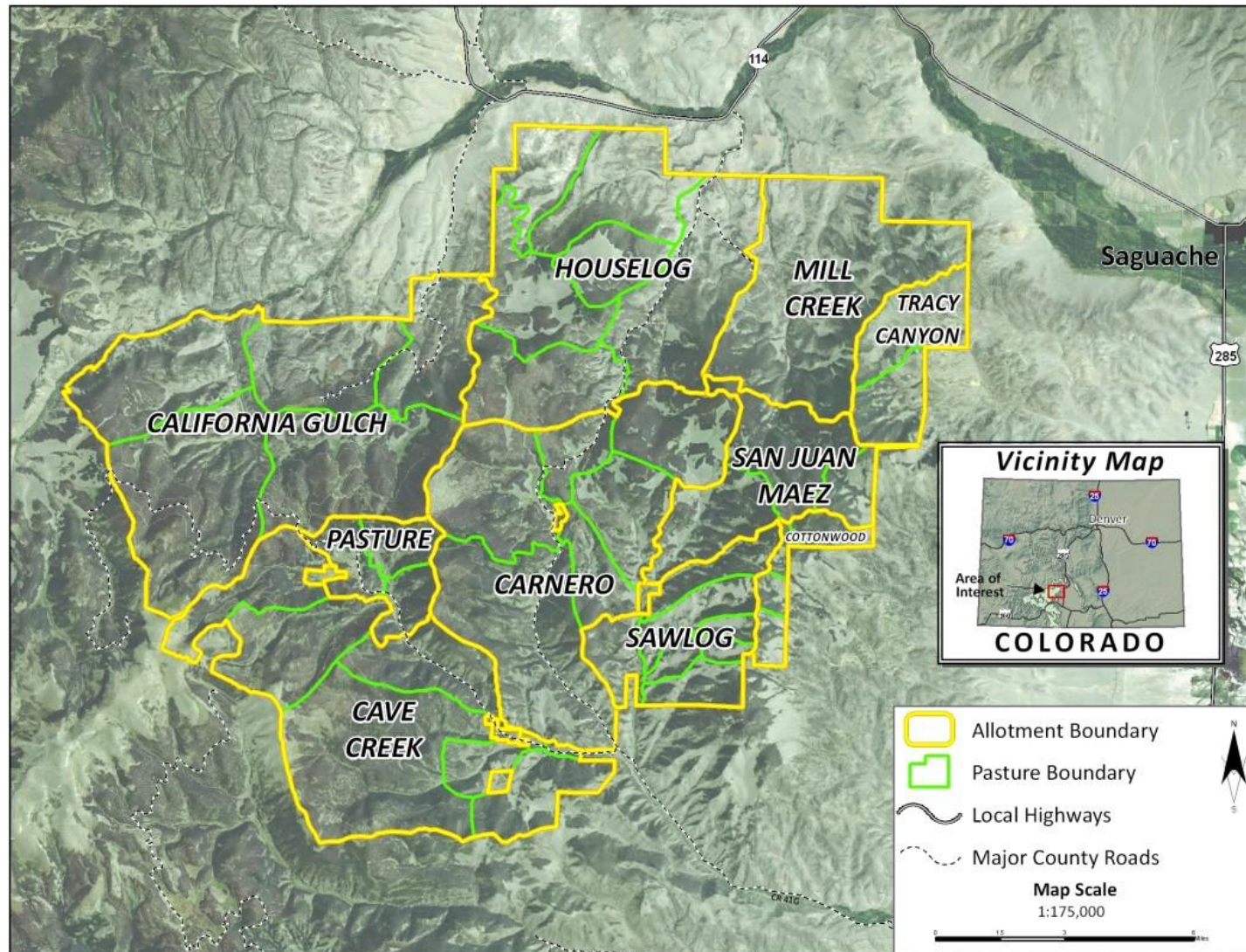
A previous EA was completed on the analysis area in May 1994. A review of the previous EA and associated allotment management plans (AMPs) was conducted in preparation for this document. All information contained in the aforementioned documents was incorporated and considered in developing alternatives, issues, and the proposed action.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Saguache Ranger District in Saguache, Colorado.

1.2 Area and Scope

The South Saguache Analysis Area (analysis area) contains approximately 133,658 total acres, of which 31,432 acres (24 percent) are determined to be suitable for the grazing of livestock through the Forest Plan suitability determination process¹. The analysis area is located across the southern portion of the Saguache Ranger District in the RGNF in the Northern San Juan Mountain Range and lies entirely within Saguache County. The future livestock management of ten existing cattle and horse (C&H) allotments is being evaluated in this EA. The affected C&H allotments are: California Gulch, Carnero, Cave, Cottonwood, Houselog, Mill Creek, Pasture, San Juan Maez, Sawlog, and Tracy Canyon. Map 1 shows the analysis area and the local communities.

¹ Rangeland Suitability Determination Including a Map of Suitable Rangelands and Active Livestock Grazing Allotments on the Rio Grande National Forest – A Report to Address the Deputy Under Secretary's Discretionary Appeal Review Decision Direction for the Rio Grande National Forest's 1996 Revised Forest Plan FEIS and ROD (May 2003) (unpublished report on file at the supervisor's office for the Rio Grande National Forest, Monte Vista, Colorado). Revised Forest Plan FEIS and ROD (May 2003) (unpublished report on file at the supervisor's office for the Rio Grande National Forest, Monte Vista, Colorado).



Map 1. The South Saguache Analysis Area and vicinity

The analysis area ranges in elevation from approximately 8,480 to 12,449 feet at Bowers Peak and spans seven 5th hydrologic unit code watersheds including the Squaw Creek, Carnero Creek, and La Garita Creek watersheds. The average precipitation for the analysis area is 8.6 inches annually with the highest precipitation occurring during July and August (worldclimate.com, 2010). Soils are primarily of volcanic origin and major vegetation types that occur include ponderosa pine forest, aspen woodland, sub-alpine fir/Engelmann spruce woodland, grasslands, and wet to dry meadows.

The scope of this analysis is limited to evaluating the appropriate level of permitted livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives. The analysis does not address recreation livestock, animals authorized under livestock use permits (i.e., where the primary purpose is not livestock production), or outfitter and guide livestock.

1.3 Proposed Action

The proposed action is to continue to permit livestock grazing within the analysis area under an adaptive management strategy (Forest Service Handbook [FSH] 2209.13, chapter 90; Quimby 2007) that would meet or move toward Forest Plan desired conditions (table 1.5-1) and project-specific desired conditions (table 1.5-3). The proposed action is designed to:

- Meet or adequately move toward Forest Plan desired conditions;
- Provide adaptive management flexibility;
- Continue improving resource trends or maintain currently satisfactory resource conditions as appropriate; and
- Contribute positively to the general economic and social vitality of the local area.

The proposed action would result in the development of new allotment management plans (AMPs) for the allotments in the analysis area. These AMPs are simply implementing documents for the alternative selected in the decision notice. Chapter 2 describes the proposed action and alternatives in detail.

The selected alternative will contain a monitoring plan to determine whether actions are being implemented as planned, and if so, if the desired results are being attained. Based on monitoring findings, livestock grazing management may be adjusted within specified adaptive management limits as described in this NEPA analysis and the decision notice.

1.4 Purpose of Action

The purpose of this action is to provide forage for permitted domestic livestock grazing in a manner that maintains or moves conditions toward achieving Forest Plan objectives and desired conditions in an acceptable time frame (table 1.5-1). Providing forage for permitted livestock is desirable in this analysis area because of the following:

- 1) Where consistent with other Forest Plan goals and objectives, there is congressional intent to allow livestock grazing on suitable lands (Multiple-Use Sustained-Yield Act of 1960; Wilderness Act of 1964; Forest and Rangeland Renewable Resources Planning Act of 1974; Federal Land Policy and Management Act of 1976; and National Forest Management Act of 1976).

- 2) The analysis area contains lands identified as suitable for domestic livestock grazing in the Forest Plan, and continued domestic livestock grazing is consistent with the goals, objectives, standards, and guidelines of the Forest Plan (Forest Plan, chapters I, II, and III).
- 3) It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for livestock grazing consistent with land management plans (36 CFR 222.2(c); and FSM 2203.1).
- 4) It is Forest Service policy to continue contributions to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depend on rangeland resources for their livelihood (FSM 2202.1; and Forest Plan, pages II-4 through II-6).
- 5) The Forest Plan, which directs the management of lands contained within this analysis area, has as one of its objectives to: “Supply ample forage to sustain wildlife and permitted-livestock populations without damaging range condition” (Forest Plan, page II-2).

1.5 Need for Action

Livestock grazing is a discretionary action by the Forest Service and there is a need to analyze the possible effects in order to continue or modify the grazing authorization. There is also a need for greater management flexibility to cope with fluctuations in environmental and social conditions including, but not limited to, annual changes in weather; to be responsive to visitor-use pattern changes; to be responsive to permittee requests for reasonable operational adjustments; and to respond to unforeseen issues.

More specifically, the need for this action is tied to any important resource, social, or economic disparity that was found when comparing the existing condition in the analysis area to the Forest Plan desired conditions. These comparisons were evaluated on a site-specific basis by an interdisciplinary team (ID Team) comprised of ecology, wildlife, hydrology, soils, fisheries, and range management field personnel and the responsible official from the RGNF. A complete list of these members is included in chapter 4. The need for action is further defined by the scope of the analysis (i.e., the analysis is limited to evaluating the appropriate level of livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives). Table 1.5-3 identifies the site-specific existing condition, desired condition and need for action by allotment, where a disparity was identified.

A discussion is provided below addressing each of the following: (1) desired condition, (2) existing condition, and (3) the need for action.

1.5.1 *Desired Condition*

The 1996 Revised RGNF Plan requires a comparison of the existing conditions to the desired conditions and to identify any important resource, social, or economic disparities that may exist when comparing the existing condition in the analysis area to the Forest Plan desired conditions. The desired conditions for the analysis area are derived from goals, objectives, standards, and guidelines in the Forest Plan, and ID Team input. The ID Team reviewed each of the Forest-wide desired conditions from the Forest Plan to establish Forest Service desired conditions for the analysis area. The desired conditions were then compared to information included in the Soil Resource and Ecological Inventory of the Rio Grande National Forest (USDA-Forest Service

1996e) and the Natural Resource Conservation Service (NRCS) range site descriptions (Erhard 1993) to estimate site potential for areas within the analysis area. Information from these sources was used to identify analysis area desired conditions and to determine if a change in livestock management was needed. Table 1.5-1 is a summary of desired conditions for resource ecosystems located within the analysis area. This summary is a generalization and is provided to bring broad-scale desired conditions from the aforementioned sources down to the project level and provide general on-the-ground desired resource conditions.

Table 1.5-1. Summary of desired condition for resource ecosystems located within the analysis area

Resource Ecosystem Community Type	Desired Condition¹
Ponderosa/Lodgepole/ Mixed Conifer Forest	Forests with diverse age structure, old growth communities, openings, snags and down woody debris across forested areas; vigorous understory of native grasses (i.e., blue grama, needle-and-thread, junegrass, Arizona/Thurber's fescues, mountain muhly, mutton grass) and forbs where light allows.
Aspen	Aspen communities with diverse age structures including old growth communities, regeneration, openings, standing snags and down woody debris across aspen areas; vigorous and diverse native grass and forb understory present.
Upland Shrub	Vigorous growth and regeneration of a mosaic of shrub age classes and species (i.e., mountain mahogany, rabbitbrush, mountain big sagebrush, oakbrush) interspersed with a variety of native grasses and forbs.
Pinyon/Juniper	Provide a mosaic of age classes and open and dense stands. An understory of native mixed bunchgrass, shrub and forb communities in open areas (i.e., blue grama, needle-and-thread, junegrass, Arizona fescue, Indian ricegrass).
Grassland	Mixed native grass and forb communities provide a mosaic of plants with species diversity, a variety of vegetative structures and sufficient amounts of litter. Principle grass species may include Arizona/Thurber's fescue, muhly species, Parry's oatgrass, native brome, blue grama, needle-and-thread, and junegrass. Grass communities show vigor and bare ground is less than 30%.
Mesic Meadow	Diverse mix of native upland and riparian graminoid/sedge and forbs present with significant proportions of riparian species relative to moisture availability. Riparian species include at least two of the following: bluejoint reedgrass; tufted hairgrass; wiregrass; spikerush; meadow foxtail; Nebraska, aquatic, beaked, woolly, &/or smallwing sedge. Graminoid communities show vigor and bare ground is less than 20%.
Riparian Areas	Properly functioning water, soil, and vegetation cycles; reproducing riparian plant communities, at least 80% of the potential vegetative cover along streams; stable, defined channels with appropriate width/depth ratios for stream type; stable banks in each stream reach maintained at 80% or more of reference conditions; balanced erosion/deposition levels. Maintain at least 80% of potential ground cover within 100' from the edges of all perennial streams, or to the outer margin of the riparian ecosystem, where wider than 100 feet. Plant species may include sedges, rushes, tufted hairgrass, reedgrass, shrubby cinquefoil, willow, alder, birch, cottonwood or spruce of mixed age class. In woody systems, riparian shrub cover of at least 35% to include a variety of species.

The responsible official would decide whether conditions are moving toward or meeting Forest Plan desired conditions, and whether changes are occurring at acceptable time frames. Forest-wide desired conditions are found online at:

<http://www.fs.fed.us/r2/riogrande/projects/plan/documents/planchap1.pdf>


Forest-level monitoring required in chapter V of the Forest Plan is available online at:

<http://www.fs.fed.us/r2/riogrande/projects/plan/documents/planchap5.pdf>

The ID Team utilized these broad-scale desired conditions along with on-the-ground inspections and monitoring to further identify upland and riparian site-specific desired conditions.

Rangeland health is defined by the Society for Range Management as, “The degree to which the integrity of the soil, the vegetation, the water, and air as well as the ecological processes of the rangeland ecosystem is balanced and sustained. Integrity is defined as: Maintenance of the structure and functional attributes characteristic of a particular local, including normal variability” (SRM 1998). The Forest Service Rangeland Analysis and Management Guide (RAMTG) (USDA Forest Service 1996C) define satisfactory condition rangelands as, "A condition in which the soil is adequately protected and the forage composition and production meets forest plan objectives or the trend in forage species composition and production is acceptable" (FSM 2210.5). Table 1.5-2 shows the generalized qualitative differences between rangelands in satisfactory condition and those considered unsatisfactory (BLM 2005).

Table 1.5-2. Comparison of qualitative characteristics between satisfactory and unsatisfactory rangeland conditions

Satisfactory Conditions (good-excellent health)		Unsatisfactory Conditions (poor health)
Desirable plants abundant		Desirable plants absent or few
Desirable plants vigorous		Desirable plants stressed
Diverse age structure in plant community		Structure confined to single age class
Diverse plant species present		Little diversity of plant species
Litter present (not excessive), contacting soil		Litter absent, not contacting soil or excessive
Sufficient vegetation		Insufficient vegetation
Minimal bare ground (dependent on soil type)		Excessive bare ground
Water soaks into ground surface		Water runs off ground surface
Soil surface protected by plants or litter		Soil surface exposed

The RGNF Forest Plan (1996) describes desired conditions for riparian areas as healthy, fully functioning ecosystem with diverse vegetation that is generally in a later-seral condition to provide site stability (page I-2). Riparian ecosystems differ from adjacent upland ecosystems because they require wetter soil moisture regimes that include at least periodic free or unbound water. This difference is typically displayed by changes in vegetation composition and abundance, as well as physical soil properties. Although riparian systems are extremely diverse and variable, a number of characteristic are considered when evaluating riparian conditions these may include: stream bank stability, meander, tree overstory, shrub midstory, and understory. Riparian areas include two ecosystems: (1) aquatic; including the stream channel, lakebed, water, and biota/habitat; and (2) riparian (the transition between and the aquatic ecosystem and the adjacent terrestrial or upland ecosystem); identified by soil characteristics or distinctive vegetation communities that require free or unbound water. This area includes the greenline, which has been identified by the National Riparian Service Team as the first 3 feet next to the water’s edge and targets *Carex* species (USDA-Forest Service 1997b) (see figure 1.5-1).

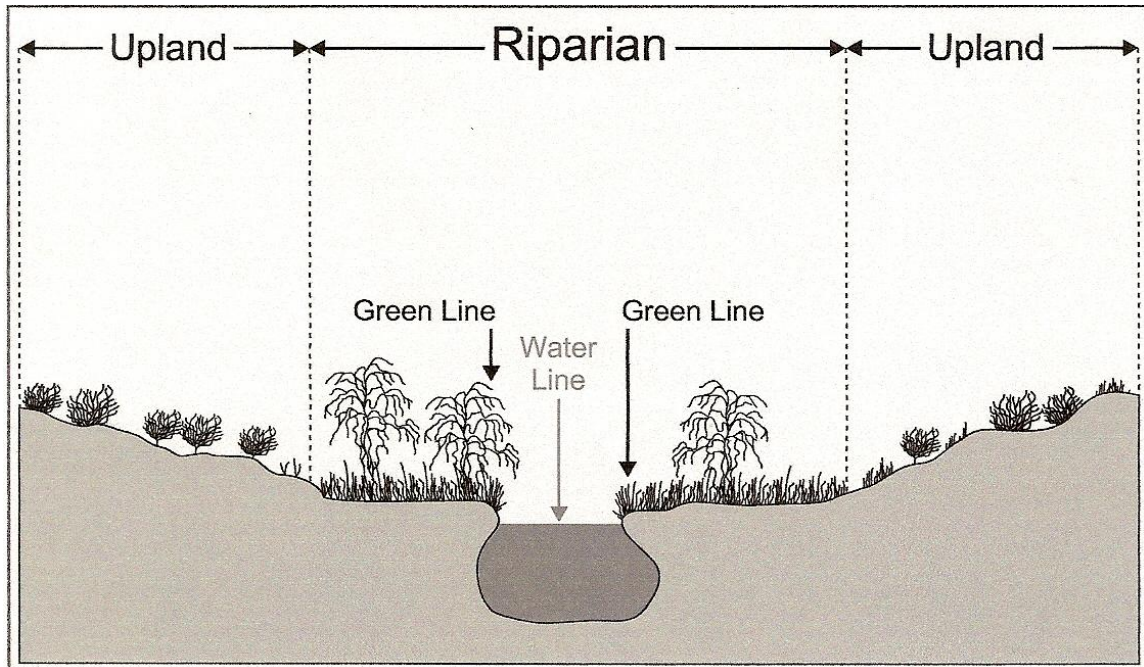


Figure 1.5-1. Stream channel cross section showing the location of the greenline, riparian area, and uplands

Source: Bureau of Land Management Technical Reference 1737-8.

1.5.2 Existing Condition

The ID Team reviewed existing conditions for resource ecosystems located within the analysis area and compared them to the aforementioned desired conditions. The majority of the analysis area was found to be meeting Forest-wide desired conditions at the broad-scale level. The existing conditions of site-specific areas for both upland and riparian areas were further evaluated throughout the analysis area. A table of monitoring sites, conditions, and trend is located in appendix A. Upland long-term monitoring locations are mapped by allotment in appendix B.

Upland areas were evaluated using long-term transects and trend information (USDA-Forest Service 1996c). Trend is defined as, “the direction of change in an attribute as observed over time”. Trend in the analysis area was derived by the use of both apparent and measured trend. Rangeland trend was determined by comparing historical data (transects plots, inspection records, photographs) with current data to determine if conditions had improved (upward), declined (downward), or stayed the same (static). In areas where no measureable trend data were available, condition was evaluated based on current and historical information collected on the ground and located in the allotment files. Detailed trend analysis and historical information is included in the 2210 Allotment Management files and in the project record. Thirty-five long-term transects were evaluated on the analysis area from 2006 to 2009. Trend was evaluated as upward for 31 transects, static for 1 transect, and downward for 3 transects. Transects that had a downward trend have been proposed as key areas in the proposed action.

Riparian areas and streams were evaluated using proper functioning condition (PFC) surveys (BLM 1993, 1994), evaluation of sedge vegetation within the greenline and riparian characteristics evaluation (USDA-Forest Service 1996c), Multiple Indicator Monitoring (BLM,

2010), reference condition evaluations (FSH 2509.25) and Forest standard and guidelines (USDA-Forest Service, 1996a) throughout the analysis area.

1.5.3 Need for Action

The majority of the analysis area was found to be meeting Forest-wide desired conditions with the exception of isolated sites within specific allotments. Monitoring and inspections conducted on the analysis area indicated that there were six site-specific locations where a discrepancy existed between existing conditions and desired conditions, resulting in a need for action. Table 1.5-3 below describes the existing condition, desired condition and the need for action at the site-specific scale and are quantitative. These areas comprise less than 4 percent of the analysis area and have been proposed as key areas or benchmarks under the proposed action.

Table 1.5-3. Identified areas by allotment where a need for action exists

Pasture/ Benchmark	Existing Condition	Desired Condition ¹	Need for Action
California Gulch C&H Allotment			
Allen Creek/ Lower Allen Creek	Species composition includes sedges, riparian grasses, and upland forb and shrub species. Hummocks present with adequate plant cover. Isolated areas of the reach exceed 20% bare ground.	No net increase in hummocking. Improve vigor of sedges and riparian grasses. Increase willow density. Achieve less than 20% bare ground throughout the reach.	Extent of wetted soils and riparian vegetation composition is less than desired.
Carnero C&H Allotment			
Middle Fork/ North Middle Fork of Carnero	A diverse age-class and composition of riparian species present with high vigor. Low <i>Carex</i> species density in localized areas along the greenline. Bare soil is currently 20%. Woody species density appears to be lower than site potential.	A diverse age-class and composition of riparian species present with high vigor. Increased density of <i>Carex</i> species with root masses capable of withstanding high flow events. Increase woody density. Bare soil less than 20%.	Bare soil along the greenline is susceptible to erosion and supplying sediment to the stream.
Cave & Pasture C&H Allotments			
Cave/ Cave Creek	This site is currently meeting desired conditions (see table 1.6-1). However, increased sediment has been identified in Cave Creek. There have been multiple factors identified as potential sources including roads and beaver and ungulate activity. Livestock management along Cave Creek will continue to focus on minimizing sediment contributions from livestock activities at the site.		
Cottonwood & Sawlog C&H Allotment			
North Fork Carnero/ Lower North Fork Carnero	This site is currently meeting desired conditions (see table 1.6-1).		
Houselog C&H Allotment			
Spring Gulch/ Lower Spring Gulch	Hummocking present with adequate plant cover. Species composition includes sedges, riparian grasses, and upland forb species. Isolated areas of the reach exceed 20% bare ground. Willow density appears to be lower than the site potential.	No net increase in hummocking. Improve vigor of sedges and riparian grasses. Achieve less than 20% bare ground throughout the reach. Increase willow density.	Extent of wetted soils and riparian vegetation composition is less than desired.

Spring Gulch/Big Dry <i>Upper Spring Gulch</i>	<p>C4: Trend indicates an increase of bare ground (1%), and a decrease of plant density (5%) and forage density (8%).</p> <p>C6: Trend indicates an increase of bare ground (11%), and a decrease of plant density (14%) and forage density (11%).</p> <p>C7: Trend indicates an increase of bare ground (9%), and a decrease of plant density (9%) and forage density (14%).</p>	For all transects, reverse the trend from increasing bare ground and decreasing plant and forage density.	Long-term trend monitoring of transects (C4, C6, and C7) indicate a downward trend.
Mill Creek & San Juan Maez C&H Allotments			
Mill Creek/ <i>Lower Mill Creek</i>	<p>Current mean bankfull width is 5.6 feet.</p> <p>Current mean bankfull depth is 0.6 feet.</p> <p>Current mean bankfull width/depth ratio is 9.4.</p> <p>Willow species density appears to be lower than site potential.</p>	Bank full width/depth ratio is less than 5. Increase willow density.	Stream is widening due to stream bank alteration. Low willow densities along portions of Mill Creek.
San Juan Maez/ <i>Upper North Carnero Creek</i>	This site is currently meeting desired conditions (see table 1.6-1).		
Tracy Canyon C&H Allotment			
North/ <i>North Tracy Canyon</i>	This site is currently meeting desired conditions (see table 1.6-1).		

¹ Accomplishment target date is 2020. The time frame and percentages are best estimates at this time, but may change if better site potential information becomes available. Enclosures may be constructed to exclude livestock and/or wildlife to determine site potential.

1.6 Relationship to Other Acts, Regulations, Permits and Plans

It is Forest Service policy to conduct its operations to ensure the protection of public health, safety, and the environment through compliance with all applicable Federal and State laws, regulations, orders, and other requirements. This EA considers whether actions described under its alternatives would result in a violation of any Federal, State, or local laws or requirements (40 CFR 1508.27), or would require a permit, license, or other entitlement (40 CFR 1502.25). By tiering this project to the FEIS and ROD for the Forest Plan, it is expected that all applicable requirements would be met.

1.6.1 Forest Plan

This EA is tiered to the FEIS (USDA Forest Service 1996b) and ROD for the Forest Plan ². All alternatives (presented in chapter 2) comply with these documents as well, unless specifically noted otherwise. The Forest Plan provides guidance for all management activities; establishes management standards and guidelines; and describes resource management practices, levels of resource production, people-carrying capacities, and the availability and suitability of lands for resource management.

The Forest Plan suitability determination process (FEIS, pages 3-181 to 3-192) documents the rangeland suitability analysis process, and presents results with a map from the 2002 analyses. These analyses determine suitable rangeland and designate where and under what restrictions livestock grazing may be permitted. The approach to suitability in this project-level analysis is consistent with the approach taken in the Forest Plan suitability determination process. The primary differences are (1) the level of detailed analysis, and (2) specific on-the-ground knowledge versus modeling, both of which improve upon the larger and coarser landscape-scale Forest Plan analysis. Landscape-level suitability determinations can be used as a starting point in a site-specific assessment, but suitability determinations made at the site-specific level supersede those made at a landscape level. Observations of actual livestock use patterns and impacts are considered in this analysis. Site-specific analysis may reveal some areas found to be suitable, despite being determined by landscape analyses as not suitable. It is also acknowledged that livestock may be present and may utilize forage in areas not mapped as suitable.

The Forest Plan also provides the framework to guide the daily resource management operations of the RGNF, and subsequent land and resource management decisions made during project planning. The National Forest Management Act (NFMA) requires that resource plans and permits, contracts, and other instruments issued for the use and occupancy of Federal lands be consistent with the Forest Plan. Site-specific project decisions must also be consistent with the Forest Plan, unless the Forest Plan is modified by amendment. This EA is a project-level analysis and evaluates the proposed action's conformance with the Forest Plan and other regulations.

This project is designed to achieve the Forest Plan's forest-wide desired conditions (Forest Plan, pages I-1 to I-6) and the regional and forest-wide objectives (Forest Plan, pages II-1 to II-6). Lands within the RGNF are managed for a particular emphasis or theme known as a management area (MA). Each MA in the Forest Plan has a description of the physical setting for the area, a description of the desired conditions for the area, and a list of the standards and guidelines that apply to the area. The individual MAs in the analysis area are shown on map 2 and listed in table 1.6-1.

The Forest Plan aggregates similar MAs into "prescription categories" that have similarities in theme, setting, and desired conditions. The analysis area contains four such categories as follows: (a) prescription category 1 includes the eligible wild rivers MA; (b) prescription category 3 includes the backcountry MA; (c) prescription category 5 includes the forest products, forage, and wildlife habitat MAs; (d) prescription category 6 includes the grassland resource

² Forest Plan (includes the ROD) is available online at:

<http://www.fs.fed.us/r2/riogrande/projects/plan/index.shtml>.

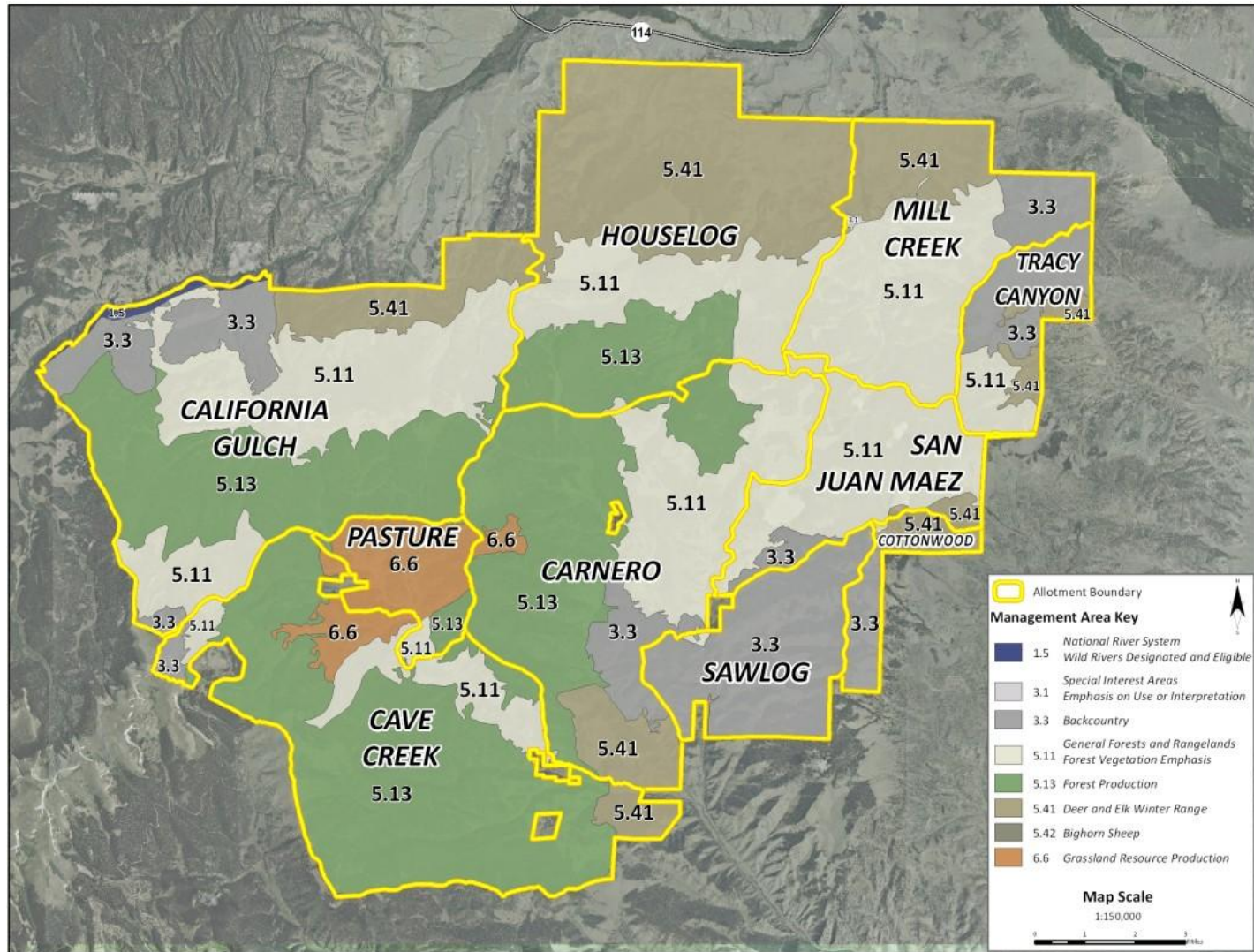
The FEIS is available online at: <http://www.fs.fed.us/r2/riogrande/projects/feis/index.shtml>. These documents are also available for review at the headquarters for the Rio Grande National Forest, Monte Vista, Colorado.

production MA. Table 1.6-1 aggregates the management areas, theme, setting, and desired condition, by prescription category, in the analysis area.

Table 1.6-1. Prescription categories in the analysis area showing MAs (acres and percent of the analysis area), theme, setting, and desired condition

	Management Area ¹		Theme, Setting, and Desired Condition by Prescription Category
Category 1	1.5	Eligible Wild Rivers 389 acres (0.3%)	The landscape is predominately natural appearing. Vegetative composition and structure are influenced by biological processes and conditions. Because of the proximity to streams, there is a greater than average diversity of plant and animal species.
	3.3	Backcountry 18,360 acres (14%)	
Category 3	5.11	General Forest and Intermingled Rangelands 42,194 acres (32%)	Ecological values are in balance with human occupancy, and consideration is given to both. Resource management activities may occur, but natural ecological processes and resulting patterns normally predominate. Although these areas are characterized by predominately natural-appearing landscapes, an array of management tools may be used to restore or maintain relatively natural patterns of ecological process. This results in some evidence of human activities. Users expect to experience some isolation from the sights and sounds of people, in a setting that offers some challenge and risk. Restrictions on motorized travel may vary from area to area, or season to season.
	5.13	Forest Products 44,030 acres (33%)	
	5.41	Deer and Elk Winter Range 24,098 acres (18%)	
Category 5	6.6	Grassland Resource Production 4,511 acres (3%)	These Forest areas are managed for a mix of forest products, forage, and wildlife habitat, while protecting scenery and offering recreation opportunities. Ecological sustainability will be protected, while emphasizing selected biological structures and compositions which consider the range of natural variability. These lands often display high levels of investment, use, and activity; density of facilities; and evidence of vegetative treatment. Users expect to see other people and evidence of human activities. Facilities supporting the various resource uses are common. Motorized transportation is common.
Category 6			Vegetation management is associated with grassland ecosystems to achieve and maintain the desired vegetation condition for livestock, wildlife, and/or recreational stock. Areas are characterized by a mix of grassland and forest ecosystems that feature large open meadows and other grasslands, intermixed with stands of aspen and/or conifers. Areas may be managed in a range of successional stages, to achieve biological diversity of plant and animal species.

¹ Livestock grazing is appropriate and authorized within each of these MAs (Forest Plan, chapter IV).



Map 2. Management areas within the analysis area

The desired conditions by prescription category in table 1.6-1 complement the Forest-wide desired conditions. Livestock grazing is appropriate and authorized within each of the MAs shown in table 1.6-1 (RGNF Forest Plan; chapter IV).

1.7 Decisions to be Made Based on Analysis

This EA discloses the environmental consequences of implementing the proposed action and alternatives to that action. A separate decision notice, signed by the responsible official (Saguache District Ranger/Field Manager), will explain the management and environmental reasons for selecting an alternative to be implemented. The decision notice will disclose the rationale for choosing the selected alternative; discuss the rationale for rejecting other alternatives; and disclose how the decision responds to the relevant issues.

The decision the responsible official will make in the DN is whether or not to authorize some level of livestock grazing on all, part, or none of the analysis area, given considerations of rangeland condition, Forest Plan goals and objectives, and public input. If the decision is made to authorize some level of livestock grazing, the management framework will be described (including standards, guidelines, grazing management, and monitoring) so that desired condition objectives are met or that movement occurs toward those objectives in an acceptable timeframe.

Once a decision is made, term grazing permits, AMPs, and annual operating instructions (AOIs) may be issued provided that they are in compliance with the NEPA-based decision. These documents are simply implementing documents and do not constitute decision points. These items are discussed as follows.

1.7.1 Implementation (*Term Grazing Permits, AMPs, and AOIs*)

Term Grazing Permits – authorize a permit holder to graze livestock (specifies numbers, kind, class, and season of use) on specific National Forest System lands. The permit holder is required by the permit to graze under specific terms and conditions designed for resource protection and enhancement, according to the NEPA-based decision. Term livestock grazing permits are typically issued for a 10-year term. Term livestock grazing permits by themselves do not authorize the permittee to develop water, construct fences, build roads or trails, manipulate vegetation, or do other ground-disturbing activities.

Allotment Management Plans (AMPs) – an administrative document developed by the Forest Service that incorporates the decisions made in the decision notice from the EA. The AMP is not a decision document in that it simply documents in a clear format management requirements and actions decided upon in the decision notice.

Annual Operating Instructions (AOIs) – on an annual basis, these documents provide instructions to the term permit holder (referred to as a permittee) regarding management requirements, projects, agreements, and so forth for the current grazing season. They are not decision documents in that they simply implement on an annual basis the decision made in the NEPA-based decision notice.

Currently, there are five term livestock grazing permits with multiple allotments issued that authorize livestock grazing in this analysis area. Current AMPs are no longer relevant due to changes in resource conditions, permit holders, and management units. The existing management situation is primarily being directed by AOIs within the 1994 NEPA analysis.

1.8 Public Involvement

The RGNF invited public comment and participation regarding this project through the schedule of proposed actions (SOPA), public notice in the *Valley Courier* (the newspaper of record), a scoping letter, and posting on the RGNF website.

Potentially affected Native American Tribes were consulted for this project through the Tribal Consultation Bulletin and mailings. The Navajo Nation responded that the project will not impact any Navajo traditional cultural properties or historical properties.

The notice of the availability of the EA for comment was made through a legal notice published in the *Valley Courier*. Every individual, organization, and Tribal government on the mailing list for this project was notified of the availability of this EA for comment. Chapter 5 lists the agencies, tribal governments, and individuals consulted.

1.9 Key Issues Associated with the Proposed Action

An issue is an effect on a physical, biological, social, or economic resource. An issue is not an activity in itself; instead, it is the projected effects of the activity that create the issue. For example, livestock grazing is an activity, but its effects on a resource can form an issue. A key issue suggests different courses of actions, thus suggesting alternatives. The Forest Service identifies key issues through contact/discussion (scoping) internally and with other agencies and the general public.

The ID Team used scoping comments from the public, Tribal governments, State, and other Federal agencies to identify key issues to be analyzed with the proposed action. Three key issues were identified for this analysis area. The key issues, along with the indicator(s) of each issue, are presented below (a brief explanation of the indicator is also provided).

☒ **Key Issue 1: Management flexibility**

Frequently changing environmental and social conditions, including, but not limited to, annual weather fluctuations such as drought, permittee requests for operational flexibility, changes in visitor use patterns and desires, Forest Service management desire to annually minimize resource conflicts, and unforeseen changes, require the Forest Service to regularly adjust management actions to current conditions and demands. Historically rigid stocking and grazing system regimes inadequately addressed annual management flexibility needs.

Indicator: Adaptability to change (i.e., management flexibility to readily adapt to current environmental and social conditions).

The indicator is intended to provide a qualitative measure for how well an alternative is responsive to the Forest Service's need to make annual management modifications.

☒ **Key Issue 2: Riparian area health**

Livestock grazing may negatively impact riparian areas across the analysis area through trampling, vegetation loss, and increases in erosion potential and sedimentation. Benchmarks and key areas (section 2.4) have been established in specific riparian areas throughout the analysis area.

Indicator: Duration and timing of livestock grazing in key areas and benchmarks identified in the analysis area.

The indicator is intended to provide a quantitative measure for how well an alternative provides for the physiological needs of riparian plants and the needs of the aquatic ecosystem.

☒ **Key Issue 3: Net economic value of livestock grazing**

Livestock-based agriculture is historically and culturally important to the northern part of the San Luis Valley. Permitted domestic livestock grazing in this analysis area is valuable to the local economy and provides a net economic benefit.

Indicator: Present net value (PNV).

The indicator is intended to give a quantitative measure of financial efficiency by alternative. A software program, called Quick-Silver, provides a relative measure of PNV.

1.10 Other Environmental/Social Concerns

No other environmental and social concerns were identified through scoping. Often, comments received during the public comment period do not become key issues because they are mitigated in the same way in all alternatives, or are not significantly affected by any alternative, or are outside of Forest Service jurisdiction. Some concerns are already regulated by Forest Plan standards and guidelines. The resource concerns with the greatest potential to be impacted, while not key issues, are addressed as environmental considerations in chapter 3.

1.11 Concerns Outside the Scope of this Analysis

The scope of this analysis is limited to evaluating the appropriate level of permitted livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives (from section 1.5). No concerns identified during scoping were beyond the scope of this analysis.

1.12 Changes from the EA for Comment

Changes from the EA for Comment include the addition of chapter 6 which contains the public comments received during the 30-day comment period and responses to those comments, minor changes to the EA in response to those comments, and minor typographical corrections and wording clarifications.

Chapter 2.0 Alternatives Including the Proposed Action

2.1 Introduction

This chapter describes the alternatives developed to meet the purpose of and need for action and address the key issues identified in chapter 1. The proposed action and alternatives, including the no-action alternative, are described and compared. Three alternatives were developed—the no-action alternative and two action alternatives.

2.2 The Process Used to Develop the Alternatives

An ID Team (listed in chapter 4) considered the elements listed below when they developed the alternatives for this analysis:

- 1) Key issues identified in chapter 1 (section 1.9).
- 2) The purpose of and the need for this project identified in chapter 1 (sections 1.4 and 1.5).
- 3) The goals, objectives, and desired conditions for the analysis area as described in the Forest Plan for the RGNF (sections 1.5 and 1.6).
- 4) Comments made by the public, the State, and other agencies during the scoping process.
- 5) The laws, regulations, and policies that govern land management on National Forests (section 1.6).
- 6) Site-specific resource information.

2.3 Alternatives Considered

Three alternatives were developed in detail for this environmental analysis process. Each action alternative was designed to be a viable alternative consistent with Forest Plan direction. Alternatives developed were based on the following themes: (1) no action (no permitted livestock grazing), (2) current livestock grazing management, and (3) adaptive livestock grazing management. There was one additional alternative considered, but dropped from detailed analysis for this EA; it is presented in section 2.7.

The alternatives presented in section 2.4 represent a range of reasonable alternatives given the key issues for the proposed action. References to “permitted livestock” apply to animals authorized under a grazing permit (i.e., where the primary purpose is livestock production) and is not intended to be applicable to recreation livestock, animals authorized under livestock use permits (i.e., where the primary purpose is not livestock production), or outfitter and guide livestock.

2.4 Alternatives Considered in Detail

Three alternatives are described and analyzed in detail as follows:

- Alternative 1 – No Action (no permitted livestock grazing)
- Alternative 2 – Current Livestock Grazing Management (as applied on-the-ground over the past 5 years)
- Alternative 3 – Adaptive Livestock Grazing Management (Forest Service proposed action)

2.4.1 Alternative 1 – No Action (No Permitted Livestock Grazing)

The CEQ regulations for implementing NEPA require that a no-action alternative be developed as a point of reference from which the agency can evaluate the proposed action. The no-grazing alternative is a viable alternative and is fully considered as such. No action in livestock management planning is defined as no permitted livestock grazing (USDA Forest Service 1996a; Forest Service Handbook [FSH] 2209.13). The permitting of livestock grazing has been found by the courts to be a discretionary action that must be evaluated under NEPA, and requires a NEPA-based decision to authorize livestock grazing (except as otherwise provided by the Rescissions Act of 1995 and other related legislation). This alternative proposes to discontinue permitted livestock grazing within the analysis area. Term grazing permits exist for the California Gulch, Carnero, Cave, Cottonwood, Houselog, Mill Creek, Pasture, San Juan Maez, Sawlog, and Tracy Canyon (cattle and horse) allotments. These grazing permits would be cancelled under the time period provisions of FSH 2209.13 and would not be renewed. The affected allotments would become vacant and could remain so indefinitely until a decision was made on their disposition by a Forest Service district ranger. A future decision could be made to permanently close allotments by a separate decision signed by the Forest Supervisor. This decision would require removal of allotment infrastructure or reassignment of maintenance. Additionally, a future NEPA decision could be made to re-stock the allotments. Table 2.4-1 provides a summary of how alternative 1 responds to the key issues from section 1.9.

Under this alternative management flexibility would be nonexistent (key issue 1) and it would not support the net economic value provided by livestock grazing (key issue 3). It would fully resolve livestock grazing impacts to riparian areas, including those areas identified as not meeting desired conditions (key issue 2).

Table 2.4-1. Alternative 1 – no action (no permitted livestock grazing) and the response to key issues

Component	Action
Key Issue 1: Management Flexibility	
Grazing System	None.
Kind of Animals	None.
Class of Animals	None.
Season	None.
Livestock Numbers	None.
Adaptability to Change	Inflexible. Livestock management as a resource tool would be eliminated. The ability to respond to annual changes in biological, physical, and social changes/desires relative to livestock grazing would be nonexistent.
Key Issue 2: Riparian Area Health	
Duration and Timing of Livestock Grazing in Benchmarks and Key Areas Identified in the Analysis Area	None; there would be no permitted livestock grazing.
Key Issue 3: Net Economic Value of Livestock Grazing	
Present Net Value	The present net value would be -\$46,900 (a measure of economic efficiency). The PNV is negative since the Forest Service would still incur administrative costs to manage the analysis area with no revenue.

2.4.2 Alternative 2 – Current Livestock Grazing Management (As Applied On-the-Ground over the Past 5 Years)

This alternative would maintain current livestock grazing management practices. Term grazing permits would continue to authorize livestock in each allotment within the analysis area. Allotment maps are provided in appendix B. Total animal head months (HMs) would not change from those currently permitted (4,269). Forest Plan standards and guidelines, the Watershed Conservation Practices Handbook (FSH 2509.25), and grazing permit terms and conditions are incorporated by reference. The project design criteria in table 2.5-1 displays project design criteria available under this alternative.

AMPs would be developed for the allotments in the analysis area.

There would be no changes in the grazing system, kind or class of livestock, numbers of livestock, or season of use (other than minor changes made, by exception, in the AOI). Table 2.4.-2 provides a brief description of current permitted livestock grazing on the analysis area for alternative 2.

Table 2.4-3 provides a summary of how alternative 2 responds to the key issues from section 1.9.

Table 2.4-2. Alternative 2 – current livestock grazing management by allotment

Allotment	Current Management ¹	
	Number of Livestock	Season
California Gulch C&H	198 cow/calf pairs (729 HMs); 962 AUMs	June 11 to September 30
Carnero C&H	335 cow/calf pairs (1,013 HMs); 1,337 AUMs	June 16 to September 30
Cave C&H	90 cow/calf pairs (361 HMs); 477 AUMs	June 11 to October 10
Cottonwood C&H	25 cow/calf pairs (76 HMs); 100 AUMs	June 21 to September 15
Houselog C&H	182 cow/calf pairs (640 HMs); 845 AUMs	June 16 to September 30
Mill Creek C&H	100 cow/calf pairs (319 HMs); 421 AUMs	June 26 to September 30
Pasture C&H	70 cow/calf pairs (258 HMs); 341 AUMs	June 11 to September 30
San Juan C&H	188 cow/calf pairs (476 HMs); 628 AUMs	June 16 to August 31
Sawlog C&H	80 cow/calf pairs (242 HMs); 319 AUMs	June 21 to September 20
Tracy Canyon C&H	61 yearlings (155 HMs); 109 AUMs	June 26 to September 10

¹ Common to all allotments: Grazing system is deferred-rotation; kind and class of livestock are cattle only, restricted to cows, calves, bulls or yearlings.

Table 2.4-3. Alternative 2 – current livestock grazing management and the response to key issues

Component	Action
Key Issue 1: Management Flexibility	
Grazing System	Ten active allotments. The grazing system would be inflexible on an annual basis to respond to biological, physical, and social needs within the constraints of the Forest Plan. A deferred-rotation grazing system would continue to be implemented in each allotment. Minor changes could be made, by exception, in the AOI.
Kind of Animals	The kind of livestock would be constrained to cattle only.
Class of Animals	The class of livestock would be constrained to cows, calves, bulls, or yearlings.
Season	The grazing season would be relatively inflexible from year to year. Minor changes could be made, by exception, in the AOI.
Livestock Numbers	Livestock numbers would be relatively inflexible. A total of 1,329 cattle, or 4,269 HMs, would be allowed on the ten allotments. Minor changes could be made, by exception, in the AOI.
Adaptability to Change	Relatively inflexible. The ability to change grazing system, season of use, and livestock numbers is unresponsive to annual changes in biological, physical, and social changes. Annual changes made in the AOI are by exception only.
Key Issue 2: Riparian Area Health	
Duration and Timing of Livestock Grazing in Benchmarks and Key Areas Identified in the Analysis Area	There would be minimal management options to control permitted livestock use in riparian areas. Previously established moderate to heavy use patterns in key riparian areas may tend to re-occur annually. Riparian areas may improve at a slow rate. Minor modifications to grazing practices could be made, by exception, in the AOI.
Key Issue 3: Net Economic Value of Livestock Grazing	
Present Net Value	The present net value would be \$274,600 (a measure of economic efficiency). Assumes no changes or upgrades to current infrastructure.

While current management has changed over time to better address certain situations and known issues, there are places where management is still insufficient in meeting or moving toward desired conditions in acceptable timeframes (table 1.5-3). Under this alternative, if monitoring shows that Forest Plan desired conditions are not being met or satisfactory progress is not occurring toward meeting the desired conditions, and all administrative actions have been exhausted, then the Forest Service has limited flexibility to make changes without completing a

new NEPA analysis. Conducting new NEPA analysis each time a change is needed requires considerable time and expense. Existing improvements would continue to be maintained as assigned in term grazing permits and may be re-constructed once the useful life has been met and the need identified. No new improvements would be developed without conducting a new NEPA analysis.

This alternative would be relatively inflexible (key issue 1) and it would only minimally resolve livestock grazing use concerns in certain key riparian areas (key issue 2). It would support the net economic value provided by livestock grazing to the extent that no future changes are needed to respond to new or continuing issues (key issue 3), but may not be fully capable of supporting current permitted HMs on a sustained long-term basis without new NEPA analysis.

2.4.3 Alternative 3 – Adaptive Livestock Grazing Management (Proposed Action)

This alternative is based on the principle of applying adaptive management. Adaptive management focuses on the end results for the resource, as opposed to selecting one specific course of action that will not be deviated from over time (alternative 2). This management is a process that uses monitoring information to determine if management changes are needed, and if so, what changes, and to what degree. It allows the Forest Service to cope with uncertainty and changing conditions over time. It provides the responsible official with “constrained flexibility” to adapt to change. This alternative strives to resolve the disparity between Forest Plan desired conditions and existing conditions in the analysis area in the shortest time frame (within the scope of the analysis, which is limited to evaluating the appropriate level of livestock grazing, given considerations of rangeland condition and other Forest Plan goals and objectives).

Adaptive management allows a proposed course of action to be selected as a starting point believed to best meet or move toward Forest Plan desired conditions. Recurrent monitoring would occur over time with evaluation of the results being assessed by the Forest Service to make appropriate adjustments in management, as needed, to ensure adequate progress toward Forest Plan desired conditions. All adaptive management options available would be analyzed under this EA and adopted for potential future use. All allotments would be active and available for permitted livestock grazing. AMPs would be developed for active allotments. The decision would remain in effect until new information or changed conditions warrant a new analysis of the allotments.

A list of potential adaptive management actions is presented in table 2.4-4. This list of management actions is not intended to be all inclusive, but provides a sense for the types of actions available to the Forest Service to maintain or improve resource conditions to meet Forest Plan desired conditions and management objectives. New rangeland management techniques, as they are developed, would be incorporated to the extent that their implementation is consistent with the effects documented in this EA and its accompanying decision notice. Forest Plan standards and guidelines, the Watershed Conservation Practices Handbook (FSH 2509.25), and project design criteria (see section 2.5) are incorporated by reference. The alternative may, in some cases, restrict the use of an action or require the use of more than one action used in conjunction with each other. All proposed adaptive management actions would be within the scope of effects documented in this EA, or a supplemental NEPA document and decision would be prepared.

Table 2.4-4. Adaptive management actions

Use of any action below must consider rangeland condition and other relevant Forest Plan goals and objectives for the analysis area under study. These actions do not preempt the project design criteria (in section 2.5) or the constraints designed into the alternative.
<input checked="" type="checkbox"/> Change season of use: Do not exceed the estimated AUM capacity.
<input checked="" type="checkbox"/> Change livestock numbers: Do not exceed the estimated AUM capacity; use allowable use standards and guidelines to determine proper rangeland use and time to move livestock (including off-date).
<input checked="" type="checkbox"/> Change livestock class: Do not exceed estimated AUM capacity.
<input checked="" type="checkbox"/> Adjust livestock grazing intensity, and/or duration and/or frequency.
<input checked="" type="checkbox"/> Adjust livestock herding to manage specific areas of concern.
<input checked="" type="checkbox"/> Modify the grazing rotation.
<input checked="" type="checkbox"/> Control livestock distribution patterns using water (turn water on/off at developed water sties).
<input checked="" type="checkbox"/> Rest specified areas from livestock grazing.
<input checked="" type="checkbox"/> Restrict livestock grazing in specified areas (does not apply to recreation and outfitter/guide livestock under this analysis).
<input checked="" type="checkbox"/> Implement multiple unit rotation with permittees' private land.
<input checked="" type="checkbox"/> Install barriers on trails to prevent livestock from cutting switchbacks on the trails.
<input checked="" type="checkbox"/> Control livestock distribution patterns by constructing drift fences.
<input checked="" type="checkbox"/> Use or exclusion of a pasture.
<input checked="" type="checkbox"/> Use of salt or supplement to modify livestock grazing behavior.
<input checked="" type="checkbox"/> Modify existing allotment infrastructure.
<input checked="" type="checkbox"/> Adjust allotment boundaries, including combining herds and allotments.
<input checked="" type="checkbox"/> Reseed or plant native grass, shrub, and forb species into areas were appropriate.

The proposed management action is designed to improve the existing condition to meet, or move toward the Forest Plan desired conditions in acceptable timeframes. Table 2.4-5 summarizes how alternative 3 responds to the key issues from section 1.9.

This alternative would provide management flexibility (key issue 1), it would provide management options that would likely resolve most livestock grazing use concerns in key riparian areas in the least amount of time (key issue 2) without additional NEPA analysis, and it would support the net economic value provided by livestock grazing (key issue 3).

Alternative 3 (adaptive livestock grazing management) is based on the principle of applying adaptive management. Adaptive management requires initiating management that will begin to resolve identified disparities between existing conditions and desired conditions in the analysis area in the shortest time frame. Effectiveness and implementation monitoring (section 2.9) would determine if a change in management is needed. If so, the appropriate adaptive management actions (table 2.4-4) would be selected to best meet the needs of the resource in the least amount of time.

Table 2.4-5. Alternative 3—adaptive livestock grazing management (Forest Service proposed action) and the response to key issues

Component	Action
<i>Key Issue 1: Management Flexibility</i>	
Grazing System	The grazing system would be flexible and could be readily modified to respond to biological, physical, and social needs within the constraints of the Forest Plan and this decision.
Kind of Animals	The kind of livestock would be constrained to cattle only.
Class of Animals	The class of livestock would be constrained to cows, calves, bulls and yearlings.
Season	The grazing season would be flexible, but would be constrained by the dates presented in section 2.6. The AUM capacity ¹ would not be exceeded for the analysis area. Resource objectives and goals would be used to determine on-dates, and allowable use standards and guidelines would be used to determine off-dates within the identified available grazing season.
Livestock Numbers	Livestock numbers would be flexible and could vary from season to season within the estimated carrying capacity for the analysis area. The estimated carrying capacity for the analysis area is 6 suitable acres per AUM ² . Livestock numbers would be limited to available forage and subject to Forest Plan standard and guidelines. The site-specific AUM capacity would depend on the intensity of the management being applied, desired conditions, weather, and other multi-use resource considerations.
Adaptability to Change	Highly flexible. If monitoring showed that the Forest Plan desired conditions were not being met, then the Forest Service could implement a grazing management action from table 2.4-4 (or any other applicable tool or strategy available within the scope of this EA) to adjust management to move conditions toward Forest Plan desired conditions.
<i>Key Issue 2: Riparian Area Health</i>	
Duration and Timing of Livestock Grazing in Benchmarks and Key Areas Identified in the Analysis Area	There would be greater management options available to control permitted livestock use in riparian areas. Management options would be more readily available for immediate use or implementation. Riparian conditions would likely trend upward more quickly than current livestock grazing management due to more responsive management.
<i>Key Issue 3: Net Economic Value of Livestock Grazing</i>	
Present Net Value	The present net value would be -\$138,500 (a measure of economic efficiency). Assumes the full suite of adaptive management actions are to occur immediately. It is unlikely that the full suite of actions would be needed.
<p>¹ Livestock grazing carrying capacity is based on historical stocking rates and site-specific project design criteria (section 2.5). Carrying capacity should be based on impacts of historical and current stocking rates, grazing management, and weather. Adjustments in carrying capacity should be made through monitoring over time to ensure progress toward desired resource conditions (Position statement on grazing capacity adopted by the Society for Range Management, February 1999).</p> <p>² Estimate based on landscape scale geographical information system (GIS) modeling analyses (USDA Forest Service 2003).</p>	

2.4.4 Common to All Allotments

Riparian area health has been identified as a key issue in the analysis area. Adaptive management would address this issue by establishing key areas in site-specific locations throughout the analysis area. Key areas are an important tool for implementation monitoring (section 2.9), and are used to inspect relatively small areas of the analysis area and then extrapolated to represent much larger areas (USDA-Forest Service 1996c). In an effort to minimize the risk of impacting allotment resources, key areas are often, but not always, located where livestock tend to concentrate. Key areas may change as needed, depending on such factors as annual weather fluctuations, past permittee compliance history, and changes in current resource and/or social issues. If monitoring of key areas indicates that management changes are needed, initial adaptive management actions used may include: increased riding, salting, supplement use, development or storage of water sources. If sufficient progress has still not been made toward desired conditions in acceptable time frames after implementation of the aforementioned adaptive management actions, temporary or permanent fences may be needed, or the area may be rested for a specified time period. These are some examples of how management actions could be utilized; others may be used depending on the specific resource situation. Proposed key areas have been initially delineated on allotment maps in appendix B.

In addition to key areas, benchmarks would be established in areas where important disparities between the Forest Plan desired conditions and the existing conditions have been identified by the ID Team, or where continued monitoring would verify current desired conditions continue over time (table 1.5-3). The benchmark sites have been selected over time by Forest Service permit administrators, resource specialists, and the livestock permittees as reference points considered sensitive and responsive to management changes. Benchmark sites are small areas where long-term trend studies are established and maintained so the manager can assess the effects of permitted livestock management. The results of these studies would drive adaptive management actions, but the entire allotment would also be considered before changes were initiated.

The benchmark monitoring, serving as a proxy for the achievement of landscape-scale desired conditions, is in addition to the yearly implementation monitoring used to make operational decisions such as date to remove livestock from the allotment or pasture. Benchmark monitoring sites, desired conditions, and monitoring protocols will be revalidated in the future as we learn more about the ecosystems, management strategies and effects, and the relationships between them. This is a fundamental premise of adaptive management. Proposed benchmarks have been initially delineated on allotment maps in appendix B.

Adaptive management would allow livestock numbers to be variable and could vary from season to season within the estimated carrying capacity for the analysis area. Landscape-scale GIS modeling analyses estimated the carrying capacity for the analysis area to be 6 suitable acres per AUM (USDA Forest Service 2003). Ground based observations and familiarity with the analysis area found this modeling estimate to be appropriate to apply to the analysis area. Livestock numbers would be limited to available forage and subject to Forest Plan standard and guidelines. The site-specific AUM capacity would depend on the intensity of the management being applied, desired conditions, weather, and other multi-use resource considerations.

Any request for additional livestock numbers may be denied or delayed by the Forest Service responsible official at anytime due to the increased workload of required monitoring. If a request is approved, monitoring of the allotment for 3 average years with current permitted numbers would occur to ensure Forest Plan allowable use standards are not exceeded. If in these

3 years Forest Plan allowable use standards are not exceeded and monitoring indicates excess forage availability, an increase of animal numbers up to 10 percent of current permitted numbers could be allowed on the fourth year after monitoring implementation. The additional animal months would be initially added through a temporary permit. If at any time during the 3-year post-increase the Forest Plan allowable use standards are exceeded, then the additional animal numbers would be removed and the temporary permit terminated. If after 3 average years with increased numbers the Forest Plan allowable use standards have not been exceeded, these numbers would be added to the existing permitted numbers. In all cases, permit numbers would be subject to livestock management. If the management of the allotment notably changes (i.e., due to a change in permit holder, lack of compliance, not meeting desired conditions, etc.), the additional permitted numbers may be reduced.

Conversely, if monitoring indicates that current permitted numbers result in Forest Plan allowable use standards being exceeded for 3 consecutive average years with current permitted numbers, the livestock numbers may be reduced by up to 10 percent. This reduction would remain in place until the permittee can administer management that would result meeting Forest Plan allowable use standards for 3 consecutive average years, at which time the permitted livestock numbers would revert to the original numbers before the reduction was taken. However, this does not precede the Forest Service administrative authority to administer immediate permit action where warranted.

2.5 Project Design Criteria

The Forest Service uses many measures to reduce or prevent negative impacts to the environment in the planning and implementation of management activities. The application of these measures begins at the planning and design phase of a project. The Forest Plan standards and guidelines and the direction contained in the Watershed Conservation Practices Handbook (FSH 2509.25) are the first protection measures to be applied to the project. Both of these sources are incorporated by reference and are not reiterated here. Other project design criteria are then developed, as needed.

The project design criteria in table 2.5-1 have been used for years on the RGNF or are common practices throughout the West and have been found to be effective in reducing potential impacts. References to “Forest officer” include any person employed by the Forest Service with the authority to request action. References to “permittee” include the grazing permit holder, their agent, herder, rider, or employee. References to “permitted livestock” apply to animals authorized under a grazing permit (i.e., where the primary purpose is livestock production) and is not intended to be applicable to recreation livestock, animals authorized under livestock use permits (i.e., where the primary purpose is not livestock production), or outfitter and guide livestock. Depending on the alternative selected, the applicable project design criteria become a part of the AMPs.

A list of project design criteria has been organized into logical categories in table 2.5-1. The project design criteria under alternative 3 expand the requirements under current management (alternative 2) to include measures that would additionally reduce negative impacts to the environment under adaptive management (alternative 3). Effects are expected to be negligible with the implementation of project design criteria.

Table 2.5-1. List of project design criteria under current management (alternative 2) and adaptive management (alternative 3)

Category	Alternative	
	2	3
Livestock Management		
<i>Livestock Herding</i>		
Livestock will be herded and distributed across the allotment(s) to achieve proper grazing utilization of key forage species.		✓
Permittees will be required to move livestock away from areas of concern, including but not limited to meadows, riparian areas, key areas, and heritage sites, to areas of normally light use, as needed or as requested by a Forest officer. This will allow livestock to make use of forage that otherwise would not be grazed before allowable use standards are met in the key areas requiring livestock to be removed from a pasture/allotment.		✓
<i>Livestock Salting/Supplement Practices</i>		
Salt or supplement will be placed on rocky knolls, well-drained sites, or in timber where soil disturbance will be minimized. Placement will encourage utilization of areas where forage has not been grazed, or where it has been grazed lightly and removed after proper use has been reached.	✓	✓
Salt or supplement will not be placed within tree regeneration areas where the smallest trees are less than 3-feet tall.	✓	✓
Salt or supplement will be placed away from key areas and available water, in areas where livestock use is usually light.		✓
Salt or supplement will not be placed closer than 0.25 mile to streams, springs, water developments, or other wetlands without prior approval of the responsible official.	✓	✓
Salt or supplement will not be placed near trailheads; on open roads; in natural travel routes, passes, parks, meadows, areas of concentrated public use; known heritage areas, or in other areas conflicting with other Forest users.	✓	✓
Salt or supplement will not be placed in known bighorn sheep lambing areas.		✓
Wildlife Resources		
All fence reconstruction and new fences will be designed to allow free movement of wild ungulates.	✓	✓
Water development exclosures cannot exclude access to water for wildlife.	✓	✓
Sufficient water for wildlife must remain at a spring source if the developed livestock water location is further than 200 yards from the source.	✓	✓
Responsible official will be notified immediately if bighorn sheep and cattle interactions occur that may be of concern for bighorn sheep health.		✓
Recreation Resources, Travel Management, and Trails		
<i>Scenic & Heritage Resources</i>		
Place rangeland improvement structures (such as fence lines and water tanks) in locations that minimize visibility, when such a location is feasible.	✓	✓
In the California Gulch Allotment, protection measures will be developed for heritage sites that have been identified as being impacted beyond acceptable levels. Adaptive actions such as tree felling and rock placement to minimized livestock use of the area will be initiated at an identified site in the West Park Creek Pasture.		✓
<i>Access, Travel Management, and Trails</i>		
Permittees are required to abide by all Forest road and trail restrictions and closures. Written approval is required prior to driving off designated routes. Verbal permission may be granted 14 days prior to the on-date for fence inspections and repair, or in emergency situations.		✓
Non-system routes leading to range improvements will be signed with "Administrative Access Only" signs or gated to prevent unauthorized motorized encroachment as needed.		✓

Gate conflicts between grazing permittees and the public will be reported to a Forest officer as soon as possible. Signs or cattle guards will be placed in areas of concern where necessary.		✓
Resource damage to recreational trail infrastructure caused by permitted livestock will be repaired by the permittee.		✓
Recreation		
Grazing permit holders will report recreational conflicts or negative interactions to a Forest officer as soon as possible.		✓
Resolution of recreational grazing conflicts or complaints by the public will include the grazing permittee when appropriate.		✓
Grazing rotations may be posted on the website or at major Forest road entrances or kiosks to help reduce potential conflicts between recreational visitors and permitted livestock activities.		✓
Grazing Management		
Allotment Management		
Keep livestock distributed as evenly as possible throughout the suitable rangelands within each pasture.	✓	✓
Domestic livestock will be removed from a pasture or the allotment if resource monitoring or new information suggests this course of action after all management options have been exhausted.		✓
The earliest livestock turn-on date and latest removal date will be based on resource conditions relative to soils, available forage, and on avoiding conflicts with elk calving and big game hunting.		✓
Noxious Weeds/Invasive Species		
Any hay, straw, or other feeds used on the allotment will be either certified as being free of noxious plants (also called noxious weeds), or will consist of heat-treated pelletized feeds.	✓	✓
Monitoring for noxious plants will be done for a minimum of 3 years post ground disturbing activities and reported to appropriate Forest officer.		✓
Upland Grazing Management		
Key grass species will be given the opportunity to reach seed set prior to grazing, or will be rested for greater than half of a growing season post-grazing.		✓
Grazing would be limited to a 21-day maximum per pasture to limit the frequency of livestock grazing individual plants to four times or less per year whenever feasible.		✓
Riparian Grazing Management		
<p><i>If the desired condition of a benchmark area includes increasing willow density, then:</i></p> <ul style="list-style-type: none"> ▪ Whenever possible, the riparian area will be grazed earlier in the season when grasses and forbs are preferred over willows. 		✓
<p><i>If the desired condition of a benchmark area includes increasing sedge or riparian graminoid density, then:</i></p> <ul style="list-style-type: none"> ▪ Grazing will focus on use when the sedges are not the only green and palatable forage in the pasture, or early in the season to allow these plants the greatest opportunity for growth post-grazing. ▪ If the above is not feasible due to pasture location, arrangement, or availability, then the amount of time allowed for grazing that particular area may be adjusted. ▪ Sedge and riparian graminoid residual standards will be 6 inches in early use pastures and 8 inches in late season use (after September 1). 		✓
<p><i>In the Carnero Allotment:</i></p> <ul style="list-style-type: none"> ▪ In the Middle Fork pasture(s), residual stubble height standards for greenline vegetation will be 6 inches in early grazed pastures and 8 inches in pastures grazed after September 1. ▪ A minimum of one long-term riparian monitoring study will be established in the Middle Fork of Carnero within 5 years. 		✓

<i>In the Mill Creek Allotment:</i>		✓
▪ A minimum of one long-term riparian monitoring study will be established in the Middle Fork of Carnero within 5 years.		
Range Improvement Construction		
Site-specific surveys/inventories would be conducted, as appropriate, for TES wildlife, TES plants, and heritage resources where new ground-disturbing activities are proposed.	✓	✓
Spring Development and Construction		
Spring source facilities will be adequately protected to prevent cattle from impacting the spring source or head box.	✓	✓
Fence Construction		
Forest Service will provide project specific standards prior to construction of new fencing.	✓	✓
Gates should be closed before livestock enter the grazing units and opened and tied back in the fall after livestock leave the allotment.		✓
Stock Tanks		
Tanks will be equipped with a Forest Service approved wildlife escape ramp.	✓	✓
Tanks will maintain a usable height to allow all ages of livestock to access water. Tanks that become elevated from trampling will be periodically backfilled.	✓	✓
Watering structures will be removed or relocated from identified sensitive areas whenever possible.		✓

2.6 Adaptive Management Actions by Allotment

The adaptive management alternative utilizes benchmarks and key areas to achieve site-specific desired resource conditions that are defined by an ID Team (table 1.5-3). If an area is not currently meeting desired condition, a proposed course of action is selected as a starting point believed to best meet or move toward the desired condition in an acceptable timeframe. Proposed locations of benchmarks and key areas in the analysis area are displayed on maps by allotment in appendix B.

Typically, the management actions would begin with less intensive options before progressing to more intense management or the construction of structures. Some actions alone may not meet the desired condition, but in combination with other actions, desired conditions may be met or moved toward. For example, if cattle were continually located in a riparian area that was not meeting desired conditions, the initial adaptive management may require increased riding combined with salt and/or supplement to draw cattle to less utilized areas and prevent cattle from lingering in the riparian area. This may mean daily riding or could be varied depending on the resource needs. If this does not resolve the concern in a timely manner (1 to 2 years), then additional water developments may be needed to provide livestock an alternative water source away from the riparian area (McIver 2004). If the concern is not resolved with any of these actions, then the time of year that cattle graze the area may be adjusted based on vegetative goals (i.e., willows or grasses), or it may be necessary to fence the area. Temporary fencing could be used while cattle are in the pasture, or it may require let-down or permanent fencing. In the most severe cases, the pasture may need to be rested for 1 or more years. The inherent nature of natural resource management makes it impossible to predict all the possible management action scenarios; however, this example illustrates how adaptive management might use time/timing, intensity, and duration/frequency of cattle use to shift an ecosystem towards desired conditions.

Adaptive management in the analysis area would focus on riparian area health and upland livestock distribution. The time/timing, intensity, and duration/frequency of livestock use in riparian areas would be monitored and adjusted in an effort to increase the composition of deep-rooted sedges and woody vegetation density along the primary floodplain for improved bank

stability. Upland utilization would be monitored and adjusted in an effort to increase species diversity, maintain or improve plant density, maximize water holding capacities and minimize soil erosion. One key area would be established in each pasture of the analysis area and one benchmark would be established in each allotment in the analysis area (see allotment maps in appendix B). The available grazing season would be June 1 to October 15 for all allotments. In the Mill Creek Allotment, winter grazing would be available from November 15 to January 30, however the total permitted AUMs for the allotment would not be exceeded in a single grazing year.

Specific concerns have been identified by allotment. The following identifies these concerns and proposed initial adaptive management actions that may be taken to address the concern.

California Gulch

Concern: The southern boundary of the allotment shared with the Cave and Pasture allotments is not fenced.

Proposed Adaptive Management Actions: Adaptive actions such as temporary or permanent fencing for controlling cattle movements between allotments would be considered along the boundary. Exact locations will be dependent on livestock movements and behavior. Adaptive actions will be taken to minimize the amount of permanent fence constructed.

Concern: Pasture sizes of the allotment are relatively large making it difficult to manage time and frequency in some pastures.

Proposed Adaptive Management Actions: It is not feasible due to cost and the forested topographic nature of the allotment to create additional pastures using permanent cross fencing. Adaptive actions such as riding, salting, supplement, temporary electric fencing and a “twice through” rotation to minimize time in any pasture would be considered.

Concern: Many of the existing improvements constructed in the 1960s and 1970s were developed as earthen stock pits. Many of these pits need to be redeveloped, and in instances where the sources may be impacted, piped to a stock tank to protect the source.

Proposed Adaptive Management Actions: A site-specific evaluation will be conducted to determine where development will be most effective and minimize resource impacts. It is therefore unlikely that all the existing pits will be redeveloped. Proposed improvement options are detailed and mapped in appendix C.

Carnero

Concern: The Middle Fork of Carnero stream has been identified as an important stream due to the presence of Rio Grande cutthroat population.

Proposed Adaptive Management Actions: Adaptive management actions that control the time/timing, intensity, and duration/frequency of livestock use in this drainage are critical to maintain and improve the stream habitat and spawning conditions. Adaptive actions such as temporary or permanent fencing, creation of a riparian enclosure, shortened grazing durations, and rest will be used to obtain desired conditions. Proposed adaptive actions include utilizing the middle fork pasture as three separate pastures to control time/timing, intensity and duration/frequency. Proposed improvement options are detailed and mapped in appendix C.

Cottonwood & Sawlog

These allotments are administered under an active memorandum of understanding (MOU) among Forest Service, Bureau of Land Management, Colorado Division of Wildlife, the Colorado State Land Board, Natural Resource Conservation Service, and privately owned land. The MOU combines management for all lands administered under all agencies. The landscape in the MOU includes 12,361 acres including private land (240 deeded acres), State land (640 acres), BLM Federal land (2,422 acres [Biedell Allotment]), USDA Forest Service Federal land (9,059 acres [Cottonwood and Sawlog allotments]). Adaptive management will be applied to all lands included in the MOU.

Concern: The Sawlog Allotment has limited fencing between pastures to control livestock movements.

Proposed Adaptive Management Actions: Adaptive management actions will focus on controlling the time/timing and duration of grazing in the allotment by using temporary or permanent fencing to create additional pastures or to control cattle movements back into areas that have already been grazed and increase available rest for vegetation. Adaptive actions will be taken to minimize the amount of permanent fence constructed. Exact locations will be dependent on livestock movements and behavior; however, three locations have been identified that would allow increased control of cattle movements. The proposed locations are detailed and mapped in appendix C.

Concern: In the Sawlog Allotment, many of the existing improvements constructed in the 1960s and 1970s were developed as earthen stock pits. Many of these pits need to be redeveloped and in instances where the sources may be impacted, piped to a stock tank to protect the source.

Proposed Adaptive Management Actions: A site-specific evaluation will be conducted to determine where development will be most effective and minimize resource impacts. It is therefore unlikely that all the existing pits will be redeveloped. Proposed improvement options are detailed and mapped in appendix C.

Houselog

Concern: Time and duration of grazing has not provided adequate rest periods in the Spring Gulch pasture. As a result, the long-term trends in this pasture are downward (appendix A).

Proposed Adaptive Management Actions: Adaptive management actions will focus on controlling the time and duration of grazing in this pasture to allow adequate rest for vegetation. Adaptive actions such as temporary or permanent fencing (less than 1 mile) for controlling cattle movements between spring gulch pasture and other pastures may be needed. Adaptive actions will be taken to minimize the amount of permanent fence constructed. Exact locations will be dependent on livestock movements and behavior, however three locations have been identified and are detailed and mapped in appendix C.

Mill Creek

Concern: Management efforts to develop a formal pasture rotation in this allotment have not been successful due to seasonal water limitations and water availability.

Proposed Adaptive Management Actions: Adaptive management actions will focus on limiting the time and duration of grazing in the same area at the same time of year. Fencing of distinct pastures is not feasible due to the open nature of the country, limited water sources, cost, and

recreational activities that occur on the allotment. Adaptive actions such as temporary or permanent fencing (less than 1 mile) for controlling cattle movements between grazing areas will be utilized as an alternative. Adaptive actions will be taken to minimize the amount of permanent fence constructed. Exact locations will be dependent on livestock movements and behavior. Two locations have been identified that would allow the allotment to be divided in half and control cattle movements. The proposed locations are detailed and mapped in appendix C.

Tracy Canyon

Concern: The allotment only has two pastures which limits the adaptive management options for controlling time/timing and frequency of grazing.

Proposed Adaptive Management Actions: Adaptive management actions will focus on controlling the time/timing and duration of grazing in the allotment by using temporary fencing to create additional pastures and increase available rest for vegetation. Adaptive actions will be taken to minimize the amount of permanent fence constructed. Exact locations will be dependent on livestock movements and behavior; however, one location has been identified that would allow increased control of cattle movements. The proposed locations are detailed and mapped in appendix C.

In addition to key areas, benchmarks, project design criteria and adaptive management actions, specific allotment infrastructure needs have been identified by allotment. Infrastructure needs are specific to each allotment and are needed to either provide changes to existing improvements or provide additional fence or water sources. The analysis area has available live water for livestock use; however, due to historical uses and topography it is important to have water improvements that will allow livestock to water off streams and springs to ensure continued upward trends in these areas and to encourage use of upland forage. All possible improvements have been identified; however, adaptive management and resource conditions will dictate which improvements are implemented. It is therefore unlikely that all proposed improvements will occur. Locations of proposed improvements in the analysis area are detailed and mapped by allotment in appendix C.

2.7 Alternatives Considered but Dropped from Detailed Consideration

One alternative was considered but dropped from detailed evaluation. This alternative is briefly described below along with the rationale for the disposition.

1. A proposal was suggested to consider sheep grazing on the analysis area.

Conversion of cattle grazing to sheep grazing is not a practical alternative for the analysis area. The analysis area is known to be occupied by native bighorn sheep, and domestic sheep have been found to be carriers of the *Pasteurella* bacteria. Studies have indicated that contact with domestic sheep may spread the bacteria to native bighorn sheep populations resulting in mortality. Disease is probably the most important limiting factor affecting bighorn sheep, often causing large (over 50 percent) and sudden (under 12 months) declines. Bighorn sheep are susceptible to a variety of parasites and diseases; however, *Pasteurella* appears to be responsible for many of the large-scale dieoffs (Schommer and Woolever 2001).

2.8 Comparison of Alternatives

Key issues and their indicator(s) by alternative are shown in table 2.8-1. Key issues were previously listed in chapter 1, section 1.9.

Table 2.8-1. Key issue comparison of the alternatives

Key Issue	Indicator(s)	Alternatives		
		1–No Action (No Permitted Livestock Grazing)	2–Current Livestock Grazing Management	3–Adaptive Livestock Grazing Management
Management flexibility	Adaptability to change	None	Limited	High
Riparian area health	Duration and timing of livestock grazing in benchmarks and key areas identified in the analysis area	None	Moderate control	Greater control
Net economic value of livestock grazing	Present net value	-\$46,900	\$274,600	-\$138,500 ¹

¹ Analyzed assuming the maximum cost of implementing all proposed adaptive management actions. Actual costs would vary depending upon the effectiveness of initial specific design criteria. To fully disclose the potential economic effects of this alternative, however, the full suite of adaptive management actions and options are assumed to occur. It is unlikely that the full suite of proposed adaptive management options would be needed.

2.9 Monitoring Measures

Monitoring and evaluation are critical to adaptive management that leads to better management and informed management decisions. Monitoring helps determine how the NEPA decisions are being implemented, and whether AMP implementation is achieving desired outcomes.

Monitoring and evaluation are vital to measure whether or not management is being effective in moving toward our desired conditions within the appropriate timeframes.

Monitoring includes both Forest-level and project-level analysis and evaluation. Forest-level monitoring is discussed at length in chapter V of the Forest Plan and is not reiterated here. Project-level monitoring is the focus of this section of the EA.

Monitoring is intended to be rapid, practical, and cost-effective. Monitoring techniques are designed to be commensurate with the level of livestock grazing use and the complexity of the overall analysis area situation. The techniques and protocols listed in the Rangeland Analysis and Management Training Guide (RAMTG) (USDA Forest Service 1996c) would be used as the basis for monitoring vegetation. If initial subjective monitoring techniques prove insufficient, then more quantitative techniques may be employed with greater precision and confidence limits, as needed. Techniques for evaluating streambank stability and alteration would follow protocols of one or more of the following: RAMTG, Watershed Conservation Practices Handbook (FSH 2509.25), Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation (Burton 2010), or Forest Plan guidance. Where new monitoring is proposed, baselines will be established when monitoring plans are implemented.

The administrative structure (hierarchical and chronological) under which monitoring is conducted is as follows:

- Decision made under NEPA; if an action alternative is selected, then:
- Grazing permit (legal authorization to graze livestock) issued with contents reflecting decision:
 - o Allotment management plan (AMP) tiered to grazing permit and reflecting decision including details.
 - o Annual operating plan (AOI) tiered to AMP and grazing permit, drafted annually to reflect decision and current resource conditions.
 - o Grazing permit compliance enforcement as needed.
- Feedback from monitoring the analysis area and adjustment of adaptive management actions made, as needed, in order to ensure conditions are meeting or moving toward Forest Plan desired conditions in acceptable timeframes. The flexibility for management adjustment varies by action alternative:
 - o Alternative 2—somewhat inflexible; changes in management may require additional NEPA analysis.
 - o Alternative 3—flexible; adjust actions adaptively (FSH 2209.13, chapter 90; Quimby [2007]) using adaptive management actions (table 2.4-4).

Discussed as follows are the two types of monitoring expected, (1) implementation monitoring and (2) effectiveness monitoring.

2.9.1 Implementation Monitoring

Implementation monitoring is short-term monitoring and evaluates whether livestock management is being applied as prescribed. The Forest Service conducts this type of monitoring through administration of the grazing authorization (permit). Administration includes inspection of the analysis area. If an action alternative is selected, the Forest Service would evaluate whether livestock management complies with the following:

1. The Term grazing permit (which includes Forest Plan standards and guidelines)
2. AOI and AMP
3. The project design criteria (table 2.5-1)

Grazing permit holders would be required to actively participate in monitoring of allotments and would be responsible for monitoring the following: livestock numbers, allotment entry and exit dates, pasture entry and exit dates, and maintenance activities for assigned improvements. This information would be kept in written format and would be made available to the Forest officer upon request. The Forest officer may provide a reporting form for the permittee's use and may specify a due date for its return to the district office.

Annual monitoring techniques would vary depending on the resources being monitored. Some examples of common implementation monitoring techniques used in the analysis area may include:

Compliance with AOI: AOIs clearly explain how each allotment is to be managed on a year-to-year basis. The instructions become part of the term grazing permit for each permittee and implementation of the instructions is the permit holder's responsibility. AOIs include

instructions for pasture rotations, animal numbers, pasture entrance and exit dates, standards for and determination of allowable use, improvement maintenance and construction, and general allotment operating procedures.

Allowable Use Standards & Guidelines (S&G): These criteria are designed to ensure that short-term effects of grazing activities are able to provide for the long-term health and sustainability of rangeland resources. There are a variety of allowable use criteria that may be employed on any key area depending on the resource concerns. The most commonly used include stubble height, residual stubble height (occurring at the end of the grazing season or the end of the growing season, whichever occurs later), riparian woody utilization, and stream-bank impacts.

Stubble Height: A visual assessment of grass/sedge stubble height, and shrub and sapling utilization to assure that stream bank conditions are not deteriorating. Assessment is accomplished by on-the-ground inspections that document the current condition, often times with a utilization cage.

Production-Utilization Surveys: Production, actual use, allowable use and acreage are estimated then overlaid and delineated on a map. This allows the manager to see where forage is over-allocated or under-used. These studies can help direct management on an annual basis.

Grazing Response Index (GRI): The GRI is used to assess the effects of annual grazing pressures, and the effects of repetitive defoliation during the growing season. Grazing permit holders would be required to provide a GRI annually to the Forest officer. This information can then be used to make annual management adjustments if needed.

Table 2.9-1 displays the implementation monitoring schedule that would be followed if an action alternative is selected.

Table 2.9-1. Implementation monitoring schedule, frequency, responsible party, and alternative

Monitoring Item	Frequency	By Whom	Alternative
Compliance checks (meeting requirements in AOI/AMP/Term Grazing Permit)	Annual ¹	Forest Service (FS)	2 & 3
Upland forage utilization (Forest Plan, Range; page III-14)	Variable ²	FS	2 & 3
Riparian forage utilization (Forest Plan, Riparian Areas; page III-5; Range; page III-14)	Variable ²	FS	2 & 3
Riparian streambank stability/alteration (Forest Plan, Riparian Areas; page III-5)	Variable ²	FS	2 & 3
Key area/benchmark forage utilization	Variable ²	FS or Permittee	3
Grazing Response Index (USDA Forest Service 1996c)	Annual	Permittee	3

¹ Permittees are responsible for compliance with all relevant terms and conditions associated with the grazing authorization. The Forest Service would make annual compliance checks and report the results to the responsible official for action, if necessary.

² The Forest Service may vary the frequency of inspections on a case-by-case basis for this monitoring item depending on such factors as annual weather fluctuations, past permittee compliance history, and changes in current resource and/or social issues. Relevant Forest Plan S&Gs are available online at:

<http://www.fs.fed.us/r2/riogrande/projects/plan/documents/planchap3.pdf>

Feedback from monitoring, and any resultant adjustments of management actions, would be dependent on the specific action alternative selected. Under alternative 2, minor management

adjustments could be made, by exception, in the AOI. Changes that cannot be done through the AOI may require additional NEPA analysis. Under alternative 3, management adjustments could be made adaptively (FSH 2209.13, chapter 90; Quimby 2007) using adaptive management actions (table 2.4-4). Initially, management would be selected that would be readily implementable by the permittee to resolve the concern. Ultimately, the management must solve the concern or another management or combination of management actions would be implemented. For example, if there is a repeated undesirable interaction between the public and livestock, then a minor adjustment to the grazing rotation might be made to avoid (or minimize) the interaction; or perhaps the season of use would need to be adjusted. The important point to consider is that there is a suite of available management actions that can be used in a hierarchical way (low-intensity to high-intensity management) to adaptively correct concerns. Compliance success means the monitoring elements meet the requirements outlined in table 2.9-1.

2.9.2 Effectiveness Monitoring

Effectiveness monitoring is long-term monitoring, focusing on whether the analysis area is meeting or moving toward desired conditions, and if the rate of change is acceptable. This level of monitoring ensures that all resource areas are meeting or moving toward desired conditions (within the scope of this analysis). The trend and rate of acceptable change is determined by the responsible official unless expressly directed otherwise in the Forest Plan.

Generally, the analysis area should be meeting or moving toward the Forest Plan desired conditions. Benchmarks (site-specific areas) and key areas would be identified throughout the analysis area under adaptive management (alternative 3). Monitoring would be concentrated in these areas, but the entire allotment or analysis area would be considered. If monitoring indicates that the desired conditions are not being met, or moved toward in an acceptable timeframe; the responsible official and the ID Team would review the grazing management actions to determine a course of action that would improve management and shift conditions toward the desired conditions.

Long-term monitoring techniques would vary depending on the resources being monitored. Some examples of common effectiveness monitoring techniques used in the analysis area may include:

Cover-Frequency Transects: Transects used to monitor changes in canopy cover and relative frequency of herbaceous species. This method provides estimates of canopy cover by species, frequency, ground cover, and production by life form through replicated sampling of plot frame transects. The combination of cover and frequency data help to overcome variability in the data due to climate changes. This method is mostly used to determine change in composition over time.

Rangeland Health Evaluation Matrix: An evaluation that assesses critical rangeland health features. Qualitative evaluation of these features can result in an accurate initial assessment of rangeland resources and subsequent management. Comparison of future rangeland health evaluations to initial evaluations provides a glimpse of trend in overall rangeland health as evidenced by a series of health indicators.

Riparian Characteristics Evaluation: An evaluation that assesses critical riparian health features. Qualitative evaluation of these features can result in an accurate initial assessment of riparian resources and subsequent management. Comparison of future riparian

characteristic evaluations to initial evaluations provides a glimpse of trend in overall riparian health as evidenced by a series of riparian characteristics.

Photographs and Photo-points: Photographs are extremely useful in documenting change over time on a landscape scale. Photos can capture the essence of a plot, transect, or point capturing important characteristics and features. Photo-points allow the photographer to easily repeat the photograph over time to assess if management goals are being achieved.

Table 2.9-2 displays the effectiveness monitoring schedule that would be followed if an action alternative is selected. Specifically, it focuses on long-term trends for: (1) overall permittee compliance with the term grazing permit, AMP, and the AOI; (2) meeting or moving toward Forest Plan standards and guidelines relative to vegetation conditions and streambank stability and alteration (transect plots, benchmark/key area monitoring, utilization trends); and (3) overall compliance with the Forest Plan chapter V monitoring elements to ensure that overall stocking levels are appropriate relative to other resource values. A detailed monitoring schedule by allotment is located in appendix D.

Table 2.9-2. Effectiveness monitoring schedule, frequency, and responsible party

Monitoring Item	Frequency	By Whom	Alternative
Trend in overall compliance with AOI, AMP, and Term Grazing Permit trend ¹	5–10 years	FS	2 & 3
Vegetation trends ¹	5–10 years	FS	2 & 3
Riparian streambank stability/alteration trend ¹	5–10 years	FS	2 & 3
Forest Plan chapter V Monitoring compliance to ensure proper stocking relative to other resource values in the analysis area ¹	5–10 years	FS	2 & 3
Long-term trend monitoring in representative benchmark sites within key riparian community types	5–10 years	FS	3

¹ Trends must be static or improving. The responsible official would decide if trends are acceptable, whether conditions are moving toward or meeting Forest Plan desired conditions, and whether changes are occurring at an appropriate rate of change. Forest-wide desired conditions are found online at:

<http://www.fs.fed.us/r2/riogrande/projects/plan/documents/planchap1.pdf>

Forest-level monitoring required in chapter V of the Forest Plan is available online at:

<http://www.fs.fed.us/r2/riogrande/projects/plan/documents/planchap5.pdf>

The feedback from monitoring, and any resultant adjustments of management actions, would be dependent on the specific action alternative selected. Under alternative 2, minor management adjustments could be made, by exception, in the AOI. Changes that cannot be done through the AOI may require new NEPA analysis. Under alternative 3, management adjustments could be made adaptively (FSH 2209.13, chapter 90; Quimby 2007) using the grazing management actions (table 2.4-4). Initially, management would be selected that would be readily implementable by the permittee and resolve the issue. Ultimately, the management must solve the concern or another management or combination of management options would be implemented. For example, if the trend in upland vegetation is declining per assessment according to the techniques in the Rangeland Analysis and Management Training Guide (USDA Forest Service 1996c), then grazing management actions(s) would be selected to reverse the declining trend. Again, similar to implementation monitoring, there is a suite of available management actions that can be used in a hierarchical way (low-intensity to high-intensity management) to adaptively correct concerns.

Chapter 3.0 Affected Environment and Environmental Consequences

3.1 Introduction

Chapter 3 describes the present conditions of the environment in and around the analysis area, and discloses the probable consequences (impacts and effects) of implementing each alternative presented in chapter 2 on selected environmental resources. It provides the analytical basis to compare the alternatives.

The chapter begins by describing the location of the analysis area, followed by a brief analysis of how each alternative responds to the key issues identified in chapter 1 (section 1.9). Then, the chapter is organized by selected environmental, social, and economic resources. Each resource discussion addresses (1) scope of the analysis, (2) past activities that have affected the existing condition, (3) existing condition, and (4) direct, indirect, and cumulative effects.

The chapter culminates with a comprehensive cumulative effects analysis that includes an introduction followed by analysis by resource and alternative. The final section provides a summary of cumulative effects for the analysis area. The time period of consideration for cumulative effects analysis is generally from the late 1870s and continuing one decade into the future. A list of terms and definitions used in the analysis is located in the glossary.

3.2 General Description of the Analysis Area

The analysis area is located across the southern portion of the Saguache Ranger District in the RGNF in the Northern San Juan Mountain Range and lies entirely within Saguache County (refer to section 1.2). The size of the analysis area is the same for all alternatives. The future livestock management of ten existing cattle and horse allotments is being evaluated in this EA; they are: California Gulch, Carnero, Cave, Cottonwood, Houselog, Mill Creek, Pasture, San Juan Maez, Sawlog, and Tracy Canyon. Not every resource area conducts their specific analysis using the same analysis area boundary. Some evaluations focus on the ten allotments; others might need to use a larger area outside the formal analysis area as shown back in section 1.2. For every resource section below, the “Scope of the Analysis” subsection clearly describes the specific analysis area used.

3.3 Alternatives and Their Response to Key Issues

This section summarizes how each alternative responds to each key issue. Key issues were displayed in section 1.9 and the alternatives were displayed in section 2.4. Table 3.3-1 summarizes key issues and their indicator(s) by alternative.

3.3.1.1 Alternative 1 (No Permitted Livestock Grazing)

Table 3.3-1 shows how alternative 1 responds to the key issues.

Table 3.3-1. How alternatives respond to the key issues

Key Issue	Indicator(s)	Alternatives		
		1–No Action (No Permitted Livestock Grazing)	2–Current Livestock Grazing Management	3–Adaptive Livestock Grazing Management
Management flexibility	Adaptability to change	None	Limited	High
Riparian area health	Duration and timing of livestock grazing in benchmarks and key areas identified in the analysis area	None	Minimal	High
Net economic value of livestock grazing	Present net value	-\$46,900	\$274,600	-\$138,500 ¹

¹ Analyzed assuming the maximum cost of implementing all proposed adaptive management actions. Actual costs would vary depending upon the effectiveness of initial specific design criteria. To fully disclose the potential economic effects of this alternative, however, the full suite of adaptive management actions and options are assumed to occur. It is unlikely that the full suite of proposed adaptive management options would be needed.

Key Issue 1: There would be no management flexibility since there would be no permitted livestock. This would be an inflexible management scenario for the Forest Service since livestock management, as a resource tool, would be eliminated. The ability to respond to annual changes in biological, physical, and social changes/desires relative to permitted livestock grazing would be nonexistent.

Key Issue 2: There would be no permitted livestock grazing; therefore, any negative impacts to riparian area health due to livestock grazing would be eliminated. Riparian areas where livestock impacts limit riparian health would move toward desired conditions.

Key Issue 3: Present net value (a measure of economic efficiency) is negative since there would be no net revenue, but there would still be Forest Service administrative costs tied to managing lands, and improvements in the analysis area (see section 3.16). Improvements not maintained would be removed from the analysis area.

3.3.1.2 Alternative 2 (Current Livestock Grazing Management)

Table 3.3-1 shows how alternative 2 responds to the key issues.

Key Issue 1: There would be limited management flexibility since the ability of the Forest Service to change the grazing system, season of use, and permitted livestock numbers would be somewhat unresponsive to annual changes in biological, physical, and social changes. Annual changes made in the annual operating instructions (AOI) would generally be by exception. The kind and class of permitted livestock would be constrained to cattle.

Key Issue 2: There would be minimal control of permitted livestock use in riparian areas. Previously established moderate to heavy use patterns in key riparian areas may tend to continue. Minor modifications to grazing practices could be made, by exception, in the AOI.

Key Issue 3: Present net value is positive since present value benefits exceed present value costs (see section 3.16). This alternative has the highest present net value as a result of implementing no new improvements or increased monitoring and operational costs.

3.3.1.3 Alternative 3 (Adaptive Livestock Grazing Management)

Table 3.3-1 shows how alternative 3 responds to the key issues.

Key Issue 1: There would be a high degree of management flexibility since the ability of the Forest Service to change the grazing system, season of use, and permitted livestock numbers would be very responsive to annual changes in biological, physical, and social changes. If monitoring indicated that the Forest Plan desired conditions were not being met, then the Forest Service could implement another action from the adaptive management actions (or any other applicable tool or strategy available within the scope of this EA—see table 2.4-4) to adjust management to move conditions toward Forest Plan desired conditions. The kind and class of permitted livestock would be constrained to cattle.

Key Issue 2: There would be a greater degree of control of permitted livestock use in riparian areas. Management options would be more readily available for immediate use or implementation. Riparian conditions would likely trend upward more quickly than current management due to more responsive management. If monitoring showed that the Forest Plan desired conditions were not being met, or allowable use standards were regularly exceeded, then the Forest Service could immediately implement an action, or combination of actions from the adaptive management actions (or any other applicable tool or strategy available within the scope of this EA—see table 2.4-4) to adjust management to move conditions toward Forest Plan desired conditions or meet allowable use standards. Adaptive management would also likely prevent future degradation allowing the Forest Service to be increasingly proactive.

Key Issue 3: Present net value (a measure of economic efficiency) is negative since present value costs exceed present value benefits (see section 3.16). This alternative has a lower present net value than alternative 2 because Forest Service and permittee administration and monitoring costs would be higher and the full suite of proposed adaptive options were analyzed. However, it is unlikely that the full suite of proposed adaptive management options would be needed.

3.4 Rangeland Resources

3.4.1 *Scope of the Analysis*

This section discusses rangeland management in the analysis area (described in section 1.2 and shown on map 1 in chapter 1).

3.4.2 *Past Actions That Have Affected the Existing Condition*

The analysis area is comprised of ten rangeland cattle and horse allotments that have a history of heavy grazing by sheep and cattle. The following summary of the early history of sheep and cattle grazing in the analysis area is taken from the historical document from the USDA Bureau of Forestry titled, “The Proposed Cochetopa Forest Reserve Colorado—Examination, Report and Recommendations” (Hatton 1904). Livestock grazing by large numbers of domestic sheep in the northern San Juan Mountains began in the late 1870s. Hatton (1904) recommended a total of 40,000 head of sheep and 23,000 head of cattle on the proposed Cochetopa Forest Reserve. The analysis area is the most southerly portion and is approximately one-quarter of the proposed Cochetopa Forest Reserve area. The rapid increase in sheep numbers was the result of the low investment necessary to get into the livestock business and the potential high rate of return (some sheep producers at that time reported annual profits of 100 percent). The 1904 report estimated that approximately 36,532 head of sheep and approximately 21,488 head of cattle grazed in Saguache County. Several upland range areas within the analysis area were terraced during the

1930s by the Civilian Conservation Corps to slow erosion due to overgrazing (Otis 1986). Similar to today, many livestock owners relied upon the mountains for summer range and the irrigated low lands for winter forage. Livestock were kept in the mountains from April to late October, the season varying with the disappearance and advent of snow in spring and fall. In some seasons they remained in the mountains from 7 to 8 months. There was intense conflict between sheep and cattle owners: often sheep would graze before and after cattle in the same area. Large portions of cultivated lands were reported to have been carried away as a direct result of “close trampling of the native sod . . . precipitation has had nothing to prevent its running off at once”. As a result, areas of the range were established sheep only or cattle only; however, overlap was common and led to further disputes between sheep and cattle owners. Undoubtedly, rangeland forage utilization was very heavy during this period.

After the formation of the Cochetopa Forest Reserve in 1905 and the subsequent formation of the RGNF in 1908, the number of livestock allowed to graze the north San Juan Mountain area was greatly reduced. Information contained in the actual use documentation was gathered from the 2210 Rangeland Allotment folders located at the Saguache District office and used to establish number of livestock and season on use by allotment. The information shows that the analysis area has a history of combined sheep and cattle use until the 1980s. It was common practice to run a band of sheep through the allotment before and after cattle grazing occurred, resulting in 6 to 7 month grazing seasons. Prior to 1980, many of the allotments were grazed as a rest-rotation grazing system, meaning one pasture was rested each year, while the others had season-long continuous grazing with no rotations. In the 1980s allotment boundaries changed significantly and deferred-rotation systems with rotation schedules were introduced, allowing for increased rest and recovery time throughout the analysis area.

There have been major reductions in numbers and season of use in the analysis area from the time the RGNF was established in 1908 to recent permitted numbers. A comparison of pre-1950s numbers of cattle and season of use show that livestock numbers have been reduced 56 percent from 3,684 (sheep converted to cattle using a 5:1 ratio) to 1,605. Season of use has been reduced approximately 12 days from an average of 89 days to an average of 77 days. Historic grazing seasons ran from May 1 to October 30 on most of the allotments, with the lower elevation allotments being grazed into December. Conversion of these numbers and season of use shows that the total number of AUMs permitted on the analysis area has been reduced from an estimated 14,427 pre-1950 to 5,539 currently permitted.

Over the last century much has been learned about cattle behavior and rangeland resource management. This improved knowledge has resulted in improved livestock management and practices. These improvements, coupled with adjusted livestock numbers and livestock on-off dates, have notably improved the vegetation condition of the rangeland compared to the conditions found by Hatton in 1904 (historical records from Saguache Ranger District 2210 Rangeland Allotment folders).

3.4.3 Existing Condition

Monitoring data and information contained in the records from Saguache Ranger District 2210 Rangeland Allotment folders shows that current rangeland conditions within the analysis area have improved over the years to the point that those areas identified in the early-mid 1900s as being in poor rangeland condition have improved and are in fair to good rangeland condition.

There are five term grazing permits with multiple allotments covering approximately 133,658 acres (31,432 suitable acres) that allow permitted livestock grazing in the analysis area. The

current permitted numbers for the analysis area are 1,329 cattle or 4,269 head months (HM). The estimated AUMs per acre carrying capacity for the analysis area is 6 suitable acres per AUM (USDA Forest Service 2003). The permitted HM total 5,539 AUMs on the analysis area, which results in an estimated 6 suitable acres available per AUM currently permitted on the analysis area. The estimated carrying capacity considers the forage needed for recreation livestock and wildlife. There are no animals authorized under livestock use permits and none are expected in the foreseeable future.

A deferred-rotation grazing system has been used since the 1980s on the ten allotments included in the analysis area. Grazing rotations are modified each year to minimize the chance of vegetation in one area being grazed annually at the same time. Grazing days in individual pastures are kept to under 25 days where feasible; however, due to limited infrastructure (water locations, fencing) in some allotments, this is currently not attainable in some allotments.

3.4.4 Direct, Indirect and Cumulative Effects

None of the alternatives would be expected to result in significant direct, indirect or cumulative effects.

Alternative 1 (No Permitted Livestock Grazing)

Management flexibility (key issue 1) would be limited under this alternative. Livestock management as a resource tool would be eliminated. The ability to respond to annual changes in biological, physical, and social changes/desires relative to livestock grazing would be nonexistent. Other means of managing rangeland resources in the analysis area to meet Forest Plan desired conditions (see Forest Plan, chapter 1) without domestic livestock grazing would be difficult.

Riparian area health (key issue 2) would improve in ecological condition in those areas not meeting desired condition due to cattle impacts. Riparian species would likely increase in cover and frequency. Streambanks would stabilize as riparian graminoids and shrubs establish on previously unvegetated or unstable sites. This trend would likely continue through the mid- to late-seral stage. However, this trend would not continue to be stable through time due to the dynamic nature of stream systems. Natural hydrologic processes (including presence of beaver) can produce dramatic changes in short amounts of time.

The overall effect of no livestock grazing on riparian conditions may be beneficial the first 8 to 10 years, and potentially neutral to negative thereafter. Indirectly, those areas in poor to fair condition would experience increases in litter accumulation and decreases in bare ground. This matting and accumulation of dead plant material would insulate the ground; provide some water-holding capacity and a decrease in surface soil movement and erosion. However, grasses have evolved with the periodic removal of vegetative material through fire, insects, or ungulates. In the absence of grazing or other disturbance, plants continue to accumulate litter (dead grass blades left at the end of the growing season). After years of litter accumulation, plants go into a “self-imposed stress” whereby the detritus (previous years’ growth) chokes out new shoots competing for light (Knapp and Seastedt 1986). The vigor of the entire plant is compromised and rangelands become less productive and healthy (Saunders and Fausch 2007). Many invertebrate and wildlife species depend upon productive grasslands, especially for winter range.

In addition to loss of plant vigor and decrease in rangeland health, the accumulation of litter allows fine fuels to build, which increases susceptibility to fire.

The net economic value of livestock grazing (key issue 3) would be negatively impacted due to the exclusion of permitted livestock grazing. This would have a direct economic effect on the individuals associated with the term grazing permits issued for the analysis area. There would also be a resultant non-significant indirect economic effect on the local economy of the San Luis Valley (see the economic analysis in section 3.16).

The elimination of permitted livestock grazing would be expected to result in gradual plant community changes over time. Generally, the plant communities most likely to be influenced would be those with gentle, accessible slopes, and areas in close proximity to water. Changes may occur as increases in cover or composition of those plant species most preferred by cattle.

Alternative 2 (Current Livestock Grazing Management)

Management flexibility (key issue 1) would be somewhat limited with current management. Allotments would continue to be used under a deferred-rotation grazing system as previously described in section 2.4.2 and shown in table 3.3-1. The ability to change grazing system, season of use, and livestock numbers would be somewhat unresponsive to annual changes in biological, physical, and social changes. Annual changes made in the AOI to permittees would generally be done by exception. Possible management adjustments needed in the future could require a new NEPA analysis. Any infrastructure changes (such as water improvements and fencing) would require new NEPA analysis. Overall, this alternative would still be expected to meet Forest Plan standards and guidelines and the Forest Plan desired conditions for rangeland resources (Forest Plan, chapter 1). However, rangeland managers must adjust to changing forage availability quickly. Forage vegetation (quality, quantity, condition, diversity, density) changes depending on environmental factors, management, human and natural events. Management that is formulated prior to the grazing season and applied without regard to changing forage availability and other factors may hinder achievement of Forest Plan desired conditions.

Riparian area health (key issue 2) would remain relatively static under current management. In general, the effect of continuing current management would be to perpetuate the conditions described in the need for action of each allotment (section 1.5). There would be minimal control of permitted livestock use in riparian areas due to limited management options. Previously established moderate to heavy use patterns in key riparian areas would tend to re-occur annually. Riparian area health is directly related to forage utilization levels in terms of timing, intensity, and duration/frequency. Minor modifications to grazing management could be made, by exception, in the AOI to address riparian issues; however, with limited management options available without conducting new NEPA analysis, it is likely that additional time would be needed to achieve Forest Plan desired conditions.

The net economic value of livestock grazing (key issue 3) would be positive. There would be no costs associated with increased monitoring or operational costs or new improvements since current management would continue (see the economic analysis in section 3.16).

Alternative 3 (Adaptive Livestock Grazing Management)

Management flexibility (key issue 1) would be optimized under this alternative. The Forest Service would be able to more readily adjust management practices to frequently changing environmental and social conditions in order to move conditions toward Forest Plan desired conditions. Management adjustments, within the scope of this EA, would be more responsive to changing conditions and could be made without conducting new NEPA analyses.

The effect of adaptive management to riparian area health (key issue 2) would allow the grazing system to be flexible and readily modified to respond to biological, physical, and social needs within the constraints of the Forest Plan and the scope of this EA. Establishing and monitoring benchmarks and key areas throughout the analysis area would provide a method to evaluate allotment management and make immediate management adjustments if needed. If proper management is being applied, utilization of forage would be more uniform throughout the allotments. Promoting uniform utilization allows previously ungrazed plants to be grazed, thus stimulating growth, and provides selectively grazed plants rest by being grazed fewer times. Adaptive management would provide long-term management options to meet Forest Plan desired conditions in the most efficient and timely manner.

The net economic value of livestock grazing (key issue 3) would be negative (see the economic analysis in section 3.16). Adaptive management was analyzed assuming the maximum cost of implementing all proposed adaptive management actions. Actual costs would vary depending on the effectiveness of initial specific design criteria. It is unlikely that the full suite of proposed adaptive management options would be needed.

Cumulative Effects

Cumulative effects consider a combination of effects such as recreation impacts, fuels management, timber management, big game populations, and livestock grazing on both private and Federal lands. Considering these impacts in the foreseeable future (10 years), it is expected that the existing rangeland plant community composition and conditions would be expected to stay relatively similar to existing conditions with gradual improvements over time. The current spruce beetle outbreak may create temporary forage availability for cattle in areas currently not found suitable. See “Cumulative Effects” (section 3.18) for a comprehensive discussion of cumulative effects.

3.5 Recreation

3.5.1 *Scope of the Analysis*

This section addresses recreation, trails, and eligible wild rivers within the analysis area.

The national recreational opportunity spectrum (ROS) and the Forest Plan are used to define and manage the expected recreation experience in this analysis and are included in the project record. The Forest Plan provides the management framework for the recreation resource.

This analysis includes the Wild and Scenic Rivers Act, as amended (2004), to assess the primary characteristics and values inherent to the one eligible wild river within the analysis area.

3.5.2 *Past Actions That Have Affected the Existing Condition*

Recreation and livestock grazing has occurred concurrently on the analysis area for over a century. Historically, recreation involved camping, horseback riding, hiking, hunting, or fishing. Over the past 20 years the primary recreation activity on the RGNF has changed to off-highway vehicle (OHV) use. Impacts from historical recreation were normally minor and localized, but those impacts have changed to being more intense, widespread, and frequent. Despite construction and/or improvements to campgrounds, dispersed campsites, trailheads, and trails, impacts from recreation has become increasingly evident as visitor use increases. The past 30 years has seen the availability and capability of OHVs increase tremendously. The increase in

OHV use affects soil, water, wildlife habitat, grazing administration, and other recreational visitors.

3.5.3 Existing Condition

There are four developed recreation sites located within the analysis area: Poso Campground and Picnic Area, Storm King Campground, Big Springs Picnic Area, and Carnero Guard Station. The most popular type of recreational use within the analysis area is dispersed recreation. Data collected in 2005 and 2006 indicates that there are approximately 259 established dispersed camping sites within the analysis area. The largest concentration of these is associated with County Road 41G.

Nearly 8 miles of Saguache Creek, located along the northwest edge of the California Gulch Allotment, are eligible for congressional designation as a “wild river,” as a result of the 1996 Forest Plan. Wild rivers are defined as “those rivers or sections of rivers that are free of impoundments, with watersheds or shorelines essentially primitive; generally inaccessible except by trail, with undisturbed landscapes” (USDA Forest Service 1996a). Livestock grazing is appropriate and authorized within the wild river management prescription.

There are approximately 283 miles of system roads located within the analysis area, of which 70 miles are administrative access only and unavailable for public use. Additionally, there are an estimated 107 miles of user-created routes. There are 8 miles of motorized trail associated with the Bowers Peak motorized singletrack trail system, located in the Cave Allotment, which is part of a larger system of motorized trails on the neighboring Divide Ranger District. There are 10 miles of non-motorized trail associated with the backcountry areas of Sawlog and California Gulch allotments.

3.5.4 Direct, Indirect, and Cumulative Effects

None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects to the recreation resource, trail system, or wild rivers.

Alternative 1 (No Permitted Livestock Grazing)

Elimination of livestock grazing under this alternative would not be expected to change recreation use patterns sufficiently. Elimination of livestock grazing could potentially change recreation use by removing the possibility of negative interactions between permitted livestock and recreation visitors. The minor amount of additional trail maintenance currently attributed to livestock impacts would be eliminated. Some visitors may prefer to not have permitted livestock in recreation areas; however, others would consider the absence of livestock and associated operations as a loss of a western heritage resource.

Alternative 2 (Current Livestock Grazing Management)

Management of livestock grazing under this alternative would not be expected to change recreation use patterns sufficiently. Interactions between livestock and recreation visitors would continue and grazing within the analysis area may affect the recreation experience. This alternative would be less responsive to limiting negative interactions between livestock and recreation use due to the limited ability to quickly respond by change grazing systems, seasons of use, or livestock numbers.

Alternative 3 (Adaptive Livestock Grazing Management)

Adaptive management would provide increased flexibility to rapidly respond to recreational conflicts. The ability to quickly change grazing systems, seasons of use, and livestock numbers to respond to potential site-specific areas of conflict with recreation or changes in recreation use. This alternative would use adaptive management actions (table 2.4-4) to separate livestock grazing activities from public concentration areas and would provide the most livestock grazing management options to reduce impacts to travel management.

Alternative 3 would result in fewer effects to the recreation resource than alternative 2, but more than alternative 1. This alternative provides the most management flexibility for livestock grazing to reduce the effects on the recreation resource and to resolve livestock/visitor conflicts and effects to recreation. Livestock effects to trails and recreation would be minimized by the application of the project design criteria for this alternative described in section 2.5.

Cumulative Effects

Cumulative effects consider a combination of effects such as recreation impacts, fuels management, timber management, big game populations, and livestock grazing on both private and Federal lands. However, the overall impact under the Forest's current land management is much less severe today than it was historically. There are no projects planned in the foreseeable future (next decade) in this analysis area that would be expected to significantly impact recreational resources. See "Cumulative Effects" (section 3.18) for a comprehensive discussion of cumulative effects.

3.6 Watershed and Aquatic Resources

3.6.1 *Scope of the Analysis*

This section discusses watersheds and the aquatic environment in the South Saguache Analysis Area. Sixth-level watersheds were selected for analysis and are identified in figure 3.6-1; the figure also includes all streams shown on U.S. Geological Survey Quad maps, plus all additional channels that can be recognized from topography at 1:24,000 scale. Riparian areas and aquatic life are associated with many of these streams.

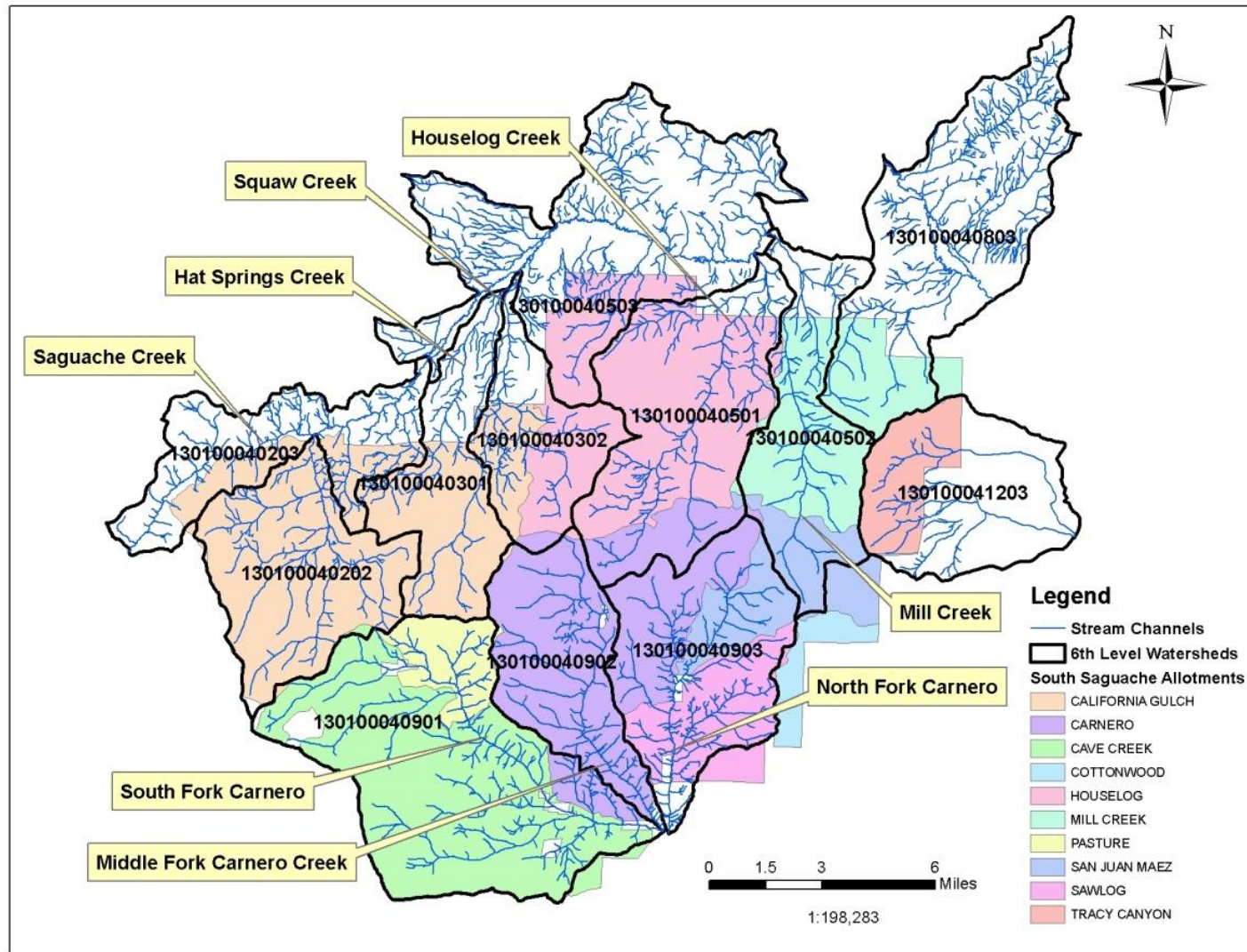


Figure 3.6-1. Aquatic environment encompassing the South Saguache Watershed Analysis Area

3.6.2 Past Actions That Have Affected the Existing Condition

Past surface-disturbing activities in the analysis area include grazing, timber harvest areas, roads, fire, and outdoor recreation sites. Due to these activities, several watersheds have moderate levels of disturbance, including Mill Creek and Houselog watersheds. The Upper Saguache Creek Watershed was identified as a “watershed of concern” during the 1996 Forest Plan revision due to previous timber and road disturbance. Recreation and livestock/wildlife grazing in the Upper Saguache Creek Watershed have caused minimal disturbances.

Historical livestock grazing has affected existing conditions in all sixth-level watersheds included in the analysis area. In most cases these impacted areas have recovered with improved management, but there are localized stream health issues related to livestock grazing. All watersheds have had road construction in the past, but construction has not been excessive. However, there are streams such as Mill and Cave creeks that have existing roads that lie within the water influence zone. Drainage from these roads is connected to these and other streams and it is a source of fine sediments during spring runoff and rainfall events.

Several of the watersheds within the analysis area have a portion designated as Backcountry Forest Plan Management Area (see map 2, chapter 1), limiting the surface disturbing activities in associated watersheds.

3.6.3 Existing Condition

The majority of the analysis area was found to have healthy watersheds and stream channels. Evidence remains of historical over use by livestock including hummocks and increased stream widths. In most areas these impacts are stable or are beginning to improve with increased management. However, there are localized stream segments identified as having site-specific reaches that were not meeting desired conditions, or had stream-health concerns. These segments were identified in Allen Creek, Spring Gulch, Middle Fork Carnero Creek, and Mill Creek. Stream and riparian health assessments were conducted during the summers of 2008–2009. Details of stream and riparian health assessments are found in the Watershed Specialist Report prepared for this project. The following is a summary of conditions documented in that report.

State of Colorado water quality regulations are in place to protect Colorado’s streams for cold-water aquatic life, recreation, water supply, and agricultural uses. In the latest Colorado 305(b) report, streams within the analysis area were reported as fully supporting designated uses (Integrated Water Quality Monitoring and Assessment Report-State of Colorado-2010). Compliance with Forest standards and guidelines and design criteria (table 2.5) in the Watershed Conservation Practices Handbook (FSH 2509.25) is a key factor in maintaining water quality in analysis area streams.

Houselog Allotment

Spring Gulch/Big Springs/Houselog Creek. Spring Gulch and Big Springs are spring-fed tributaries to Houselog Creek. Overall stream health in these streams and springs was found to be good with sufficient riparian species present including sedges and willows. Streams have segments with bank alteration, such as hummocks, caused by livestock use, but alteration and impacts did not impair overall stream health and function. Spring Gulch was identified as having bank alterations in short reaches that have resulted in increased stream widths in the lower portion of the stream. This area is a proposed benchmark under the proposed action.

California Gulch Allotment

Hat Springs/Hat Springs Creek. Hat Springs Creek is a spring-fed stream tributary to West Park Creek. Overall stream health is robust with sufficient riparian species present including sedges and willows. Upper portions of the creek near the spring (~1/8 mile) exhibit long-term or historical impacts including hummocks and an increased stream width. Hat Springs is a proposed key area under the proposed action.

Moon Creek/Upper Tributaries to West Park Creek. Moon Creek is an upper branch of California Gulch. This ephemeral/intermittent stream is stable with healthy riparian present in wet areas. Two small ephemeral drainages tributary to West Park Creek in the southeast part of the allotment were found to have overall good vegetation conditions with stable channels. Hummocks were present, but there were no signs of active erosion or recent hoof shear.

Allen Creek/Grouse Creek/California Gulch. Allen and Grouse creeks are spring fed tributaries to California Gulch located in the west-central part of the allotment. Grouse Creek was found to be a healthy robust stream with good stream bank stability and riparian vegetation. Allen Creek is fed by various springs and stream conditions vary with terrain, vegetation, and soil substrates. Upper stretches of the creek are relatively open with predominately upland vegetation. Riparian vegetation is isolated to the spring and short intermittent or perennial reaches. Middle and lower stretches are more confined and narrow with predominately riparian vegetation although some upland species are present. These narrow areas have a high occurrence of hummocks due to historical and recent grazing impacts. The water table in the area appears to have lowered and the site is drying out resulting in an increase in the presence of upland shrubs along the stream. The stream in the lower section of the drainage is often below the surface between large cobble and boulder forming the streambed. This area has been identified as a proposed benchmark in the proposed action.

Overall stream health on California Gulch is robust. Portions of this stream are situated within a narrow valley with livestock use concentrated along the stream and adjacent areas where slope is low. There are localized reaches in the stream that were found to be impacted by hummocks and bank alteration, but alteration and impacts do not impair overall stream health and function.

Carnero Allotment

Fullerton Park/Upper North Fork Carnero Creek/Mann Creek. Fullerton Park is located in the far northeast portion of the allotment. Water sources include developed and undeveloped springs that feed perennial tributaries of upper north Carnero Creek.

Overall stream health is robust with sufficient riparian species mostly limited to sedges and riparian grasses. However, upper portions of North Fork Carnero and Mann creeks exhibit long-term or historical impacts including hummocks and bank alteration that have resulted in a widening of the stream channel; one localized reach of the North Fork Carnero Creek could be considered at-risk. High bank alteration was noted on Mann Creek along one upper reach just below the cow camp and on one reach approximately 0.5 mile north of the private land boundary on the creek. Unstable bank on one short reach (approximately 125-yard length) on this lower reach was measured and exceeded Forest guidelines. These areas are proposed as key areas under the proposed action.

Middle Fork Carnero Creek. The Middle Fork of Carnero Creek is an important stream due to the presence of a cutthroat trout population. The drainage is steep and meadow riparian areas are narrow along most of the stream. In the upper part of the drainage, meadow/riparian areas are

larger along tributaries that drain from the west including Lost Cabin Creek, Cecilia Creek, and several unnamed tributaries just southwest of Carnero Pass.

Due to the topographic constraints, use by livestock along the narrow riparian corridor is high and timing and duration of grazing is critical to maintain robust stream health. The greenline has been widened in isolated areas as a result of hoof impacts and in some areas the channel width has increased. Observations before and after grazing indicates that the grasses and sedges recover well, but the hummocky nature of the banks remain and are susceptible to erosion of fine sediment during the next runoff season.

Two specific areas were identified as having impacts where stream health was identified as at-risk due to sediment and stream bank stability issues: (1) a reach above Storm King Campground, and (2) another approximately 1 mile downstream. The bank alteration by hoof impact caused fine sediment to enter the creek, negatively impacting aquatic habitat. Other sources of sediment include the roads in the area. This area is a proposed benchmark and key area under the proposed action.

In contrast, several reaches were also observed that had good overall stability and low alteration. These reaches have narrow channels and healthy sedge, alder, and willow components. Reaches that have high alder composition are in better overall condition because they limit livestock and wildlife access to the stream banks. However, in smaller more open areas along these reaches there are impacts including hummocks and unstable, exposed bank areas that are contributing fine sediment inputs to the creek.

Mill Creek Allotment

Mill Creek. Mill Creek is the main perennial drainage within this allotment. The stream lies within a narrow steep-sided drainage. Upstream there are some larger meadow areas on moderate slopes, mainly on the west side of the stream. Mill Creek has a high recovery potential, but timing and duration of livestock grazing is critical since the riparian zone is narrow and livestock tend to congregate there during warmer weather.

Localized reaches of Mill Creek have characteristics of a stream that has been negatively impacted by historic and current grazing. Long-term impacts that were observed include hummocks, channel entrenchment, and increase in stream width. Short-term or recent impacts by livestock include a high percentage of stream bank alteration during the grazing season and increased fine sediment in the stream due to alteration and unstable bank resulting in sections of the stream being identified as at-risk. The middle stretch of Mill Creek is a proposed benchmark and an upper segment of the stream is a proposed key area under the proposed action.

Reaches of the stream that have high alder composition are in better overall condition because they limit livestock and wildlife access to the streambanks. However, in small, more open areas along these reaches there are impacts including hummocks and unstable, exposed bank areas. The stream reach on Forest near the BLM boundary is in robust stream health.

Sawlog Allotment

The Sawlog allotment includes the middle and lower stretches of North Fork Carnero, Poison Gulch, Sawlog Creek, and Dry Gulch drainages.

North Fork Carnero. The main stem of North Fork Carnero located in the Sawlog Allotment is in robust stream health, with stable banks and riparian vegetation in excellent condition.

Sawlog/Poison Gulch. Overall stream health along Sawlog and Poison creeks is good with healthy vegetation in meadows and no signs of surface erosion or gully formation. The stream types vary from ephemeral to perennial reaches depending on spring discharges. Developed watering locations from springs have hoof shear impacts that are impacting localized vegetation and contributing sediment to the source. However, this localized impact does not impair overall stream health and function. Additional fencing around the springs or using tanks to move the water away from the springs would benefit the resource for wildlife and livestock.

In Poison Gulch, the wet sedge meadow in the lower part was found to be in good condition with stable banks. Hummocks were present, but recent hoof shear was minimal.

In Sawlog Creek, short stream channel reaches below water developments had good grass and sedge cover with some bank alteration contributing minimal sediment to the stream. Hummocks were present, but recent hoof shear was minimal.

Dry Gulch. Streams in Dry Gulch in the upper watershed are mostly ephemeral and channels are stable with good grass vegetation. Lower in the watershed spring flow provides water, and the channel areas were found to be in good condition. Historic gullies were apparent, but have healed well over time with vegetation on sideslopes at the angle of repose.

San Juan Maez Allotment

Main streams in this allotment include upper North Fork Carnero Creek, upper San Juan Creek, and Upper Mill Creek. The upper North Fork Carnero Creek has robust stream health, with stable banks. Overall stream and watershed health is good.

Upper Mill Creek lies within a narrow, steep-sided drainage. Water, shade, and forage draw livestock into this area where time and length of grazing is critical in maintaining good stream health. Historical impacts, such as hummocks, as well as current bank alteration impacts, are present in this upper watershed area and were noted during a PFC evaluation in 2009. This area is a proposed key area under the proposed action.

A small wetland (around a spring) was identified in the upper reach of San Juan Creek. Vegetation, including willow, appears to have been negatively impacted by grazing. On a downstream reach of San Juan Creek near the RGNF-BLM boundary fence, a high percentage of bank alteration is present along the stream where cattle stack and water.

Cave Allotment

Main streams within the Cave Allotment include South Fork Carnero, and Cave. These streams were found to be overall in robust stream health, with healthy riparian vegetation. Streams have isolated segments with bank alteration caused by livestock use such as hummocks, but alteration and impacts did not impair overall stream health and function.

Pasture Allotment

Main streams within the Pasture Allotment include Upper South Fork Carnero and Deer Creeks. These streams were found to be in robust stream health, with healthy riparian vegetation and stable stream banks. Streams have isolated segments with bank alteration caused by livestock use such as hummocks, but alteration and impacts did not impair overall stream health and function.

Cottonwood Allotment

Cottonwood Allotment includes the upper reaches and tributaries of Cottonwood Creek, Sanderson Gulch, Biedell Creek, and Lime Creek. Topography is steep and streams are ephemeral with some isolated seeps. Stream channels are stable and no erosion problems were identified.

Reaches were found to be in good health with healthy riparian vegetation. There are isolated segments with bank alteration caused by livestock use such as hummocks, but alteration and impacts did not impair overall stream health and function.

Tracy Canyon Allotment

Main drainages in Tracy Canyon Allotment include North Tracy and South Tracy. North Tracy is ephemeral on most of its length, with some spring flow noted in an upper reach within timbered areas. South Tracy has similar channel morphology with several local springs and riparian areas. Stream health is robust in drainages. The channel on lower North Tracy is entrenched from historical impacts, but has healed well and has good vegetation on channel sideslopes.

3.6.4 Direct, Indirect, and Cumulative Effects

None of the alternatives would result in significant direct, indirect, or cumulative effects. No alternative is expected to change the temperature or chemical quality of water. All alternatives are expected to meet condition requirements provided by the Forest Plan. Table 3.6-1 summarizes the effects based on the watershed and aquatic resources analysis.

Potential impacts of livestock grazing on stream/riparian health and fish habitat are described in the Revised Forest Plan FEIS, pages 3-274 and 3-202. Actual impacts of past activities are described by specific resource in this chapter. Stream health is directly related to fish habitat; improving stream health also improves fish habitat.

The Clean Water Act requires that the chemical, physical, and biological integrity of all waters, stream channels, and wetlands be protected. Forest Plan standards and guidelines and WCPH design criteria would provide that protection. By following these measures, the impacts on streams and fish habitat would be minimal and insignificant. No alternative is expected to noticeably change the chemical quality of water. Temperature changes are also expected to be undetectable.

Table 3.6-1. Direct, indirect and cumulative effects for Watershed and Aquatic Resources

Effects Analysis		Alternative 1 – No Action (No Permitted Livestock Grazing)	Alternative 2 – Current Livestock Grazing Management	Alternative 3 – Adaptive Livestock Grazing Management
<i>Aquatic Ecosystems</i>				
Physical	Sediment	NE ¹	ME	ME
	Bed/bank stability	NE	ME	ME
	Flow regimes	NE	NE	NE
Chemical	Temperature	NE	NE	NE
	Water purity	NE	ME	ME
Biological	Aquatic life	NE	ME	ME
	TES species	NE	ME	ME
<i>Special Areas</i>				
Riparian Ecosystems		NE	ME	ME
Wetlands		NE	ME	NE
Floodplains		NE	ME	ME
<i>Cumulative Effects</i>				
Aquatic Ecosystems		NE	ME	ME
Riparian Ecosystems		NE	ME	ME

¹ NE = no effect; ME = minor effect; SE = substantial effect.

Note: This checklist ensures that all required effects are analyzed, gives a snapshot of all effects, and identifies items to dismiss from rigorous analysis.

Effects Common to all Alternatives

The Clean Water Act of 1987 requires that chemical, physical, and biological integrity of all waters, stream channels, and wetlands be protected. All proposed alternatives provide this protection. The action alternatives will ensure compliance through implementation of Forest Plan standards and guidelines which are expected to provide protection.

Alternative 1 (No Permitted Livestock Grazing)

No impacts from permitted livestock to watershed or stream health would result from this alternative. Vegetation impacted under current management would recover over time with rest. Existing good watershed and stream conditions would be expected to improve over time. Removing livestock from all allotments would eliminate all potential livestock-grazing impacts on stream channels, riparian areas, and associated habitat. This would produce the quickest recovery of reaches negatively impacted by livestock grazing.

Alternative 2 (Current Livestock Grazing Management)

No new surface disturbances would occur in any watersheds. Watersheds, stream channels, and riparian areas would be left in their existing condition. Impacts on site-specific areas along creeks and other areas noted above could be dealt with through annual operating instructions

(AOIs). However, achievement of desired conditions through the minor changes afforded through AOIs would likely be much slower without the flexibility available in the adaptive-management alternative. This alternative provides minimal management flexibility to respond to existing impacts on watershed and aquatic resources and would likely result in slower recovery of areas currently not meeting desired conditions.

Alternative 3 (Adaptive Livestock Grazing Management)

Adaptive management would provide increased flexibility to respond to areas where current range and watershed health conditions are not currently meeting desired conditions and would be expected to result in more rapid recovery than under current management (alternative 2), although not as quickly as no grazing (alternative 1). The flexibility provided by adaptive management actions (table 2.4-4) under adaptive management would allow more rapid adjustment of grazing plans if initial corrective measures did not improve conditions as expected. Concerns with stream and riparian health can improve quickly with aggressive management to control time, timing and duration of use. Adaptive management allows the use of management actions such as season of use, numbers, pasture exclusion, and exclosure construction to be utilized in a more responsive manner without additional NEPA.

Monitoring of key areas and benchmarks (appendix B) would provide information about resource conditions that would identify if conditions were moving toward or meeting Forest Plan desired conditions or would identify problem areas so corrective actions could be implemented in a timely manner. Riparian areas improve quickly with management that controls time, timing and duration of use. Placement of proposed fences and water sources to better manage distribution would be more flexible under this alternative, and would result in improved stream health.

No new stresses would be placed on stream channels and riparian areas. Direct and indirect impacts would not be expected to threaten existing overall good stream health conditions.

Winter grazing is proposed as an adaptive action in the Mill Creek Allotment. Grazing on frozen soils has the potential to decrease pressure on riparian vegetation and lessen impacts to soils. Management will be important in the success of this option as grazing while soils area saturated (such as spring thaws) in riparian areas would increase watershed impacts.

Cumulative Effects

The accumulation of watershed disturbances from past activities does not exceed Forest Plan concern levels except for the previously mentioned sixth-level watersheds included in this analysis. Tabulation of varying types of disturbances by watershed is provided in the specialist report prepared for this EA. Roads and beaver and ungulate activity are sources of fine sediments on some stream reaches where they are located near stream channels such as Mill and Cave creeks. Recent road work along Mill Creek should alleviate some of this impact.

A recent timber sale (Long Lost Cabin) was completed in the Carnero Allotment area in 2009. Impact to stream health was minor because standards and guides were applied.

Surface disturbances in the Sawlog and Tracy Canyon allotments have been limited due to backcountry designation, and steep topography has limited other activities such as timber harvest. Forest Plan standards and guidelines would be used to prevent additional disturbances associated with timber harvest or other activities from having impacts on channels.

See “Cumulative Effects” (section 3.18) for a comprehensive discussion of cumulative effects.

3.7 Soil Resources

3.7.1 Scope of the Analysis

The scope of this analysis focuses on grassland soils/ecosystems where permitted livestock grazing would likely occur and is bounded by the analysis area shown in chapter 1, map 1. An assessment of the effects on soil health (as defined in the Forest Plan) is the focus of this analysis.

3.7.2 Past Actions That Have Affected the Existing Condition

The activities affecting the existing soil conditions on these allotments are from past and current livestock grazing and wildlife uses, off-road vehicle impacts, dispersed camping and illegal off-road vehicle uses. Logging and periodic prescribed burns have occurred on lands adjacent to these rangelands.

3.7.3 Existing Condition

Site investigations were conducted on the analysis area beginning in late 2009. Standardized methodologies were used to analyze soils in the analysis area. Methods used were adapted from the USFS Region 3 Soil Management Handbook (USDA Forest Service 1999), and includes parameters used to measure Forest Plan soil compliance. This handbook uses a standardized checklist to rate 17 key soil indicators as either satisfactory, impaired, or unsatisfactory. A summary of this checklist as well as professional knowledge, photos, and field notes were used to assign a final rating for each soil unit examined. Soil units were examined based upon the accessibility of key areas to cattle grazing. The Soil Resource Ecological Inventory (SREI) of the RGNF (USDA Forest Service 1996e) was used as a guide for reference conditions. Field sampling was located in site-specific areas where there was evidence of past or current grazing.

The more important indicators for management are litter, basal cover (vegetative ground cover), and bare soil. Bare soil trend shows whether surface cover is being maintained, reduced, or increased. Litter and basal cover are important for nutrient cycling, conserving soil moisture, and minimizing surface runoff.

All sites sampled on the analysis area showed signs of historical heavy grazing indicated by a conversion of soil structure. This alone is not indicative of a degraded site, but does indicate there has been past heavy use and recovery is occurring. Generally, soils in the lower elevation vegetation types of the analysis area such as the pinyon pine/meadow types appear to be in a less desirable condition than upper elevation areas. This is likely because these drier sites are more prone to soil erosion due to a lack of precipitation for vegetative cover. Additionally, these areas historically had longer grazing seasons which resulted in more degraded resource conditions from which to recover.

The majority of the soils located in the analysis area are healthy, meet required soil standards, and have been determined to be satisfactory. There are isolated locations (each of which is less than 10 acres) where soil health is impaired or unsatisfactory. These areas were examined intensively during analyses; however, these areas constitute a small percentage of the overall analysis area. Attention should be taken to monitor these areas to ensure upward trends continue. These areas have been identified as key or benchmark areas in the proposed action.

Overall, watershed conditions in the examined allotments were acceptable. There were areas such as stock ponds, corrals, fence lines, and salting sites where there was concentrated trampling and compaction. These only constitute a small portion of the allotment and are not cause for concern.

3.7.4 Direct, Indirect, and Cumulative Effects

The desired condition for the soil resource is described in the Forest Plan as, “Soils are maintained or improved to healthy conditions so that ... erosion ... [and] compaction are kept within allowable limits” (Forest Plan, page I-3). Soil erosion and compaction can result if livestock use is not properly managed; however, soil health can be maintained under proper grazing management. Soil standards and guidelines would be implemented in all alternatives. Where current conditions do not meet standards, the desired condition is to move toward achieving standards. The best method to improve soil health is by maintaining or re-establishing a healthy and diverse community of desirable plants. None of the alternatives would be expected to result in direct, indirect, or cumulative effects.

Alternative 1 (No Permitted Livestock Grazing)

There would be no impacts from permitted livestock on soil health. A slight improvement of impaired acres might occur along livestock trailing areas since permitted livestock would be removed. SREI units which are unsatisfactory due to soil effects will remain in that state for some time. These SREI units will eventually move towards a satisfactory condition with abundant plant growth and a subsequent build-up of stabilizing ground cover. The cessation of grazing alone will eventually result in satisfactory conditions without additional restorative activities. Site locations with effects from recreation will not be addressed by the no-action alternative. Satisfactory SREI units will remain in that state and likely improve. There are no additional detrimental soil effects such as detrimental compaction or displacement expected from implementation of the no-action alternative.

Alternative 2 (Current Livestock Grazing Management)

There would not likely be improved soil conditions to previously established impact areas under current management. Soils not meeting standards are likely to not improve over the short term, but would slowly improve over the long term.

SREI units which are unsatisfactory due to soil effects will remain in that state. Plant re-growth and ground cover accumulation will be slower than under the no-action alternative.

Unsatisfactory sites may recover with current grazing, but current grazing will slow recovery, and it is not clear how long it will take to get to satisfactory conditions. Soils that are in overall satisfactory condition would remain that way with a continuation of current management. The SREI units currently in satisfactory condition for soil function and stability will remain that way under alternative 2. Monitoring of riparian zones that have been identified as having degraded conditions will continue using current methods. However, alternative 2 provides less flexibility to respond to additional unforeseen issues than the adaptive management (alternative 3).

There are no additional detrimental soil effects such as detrimental compaction or displacement expected from implementation of alternative 2.

Alternative 3 (Adaptive Livestock Grazing Management)

The adaptive management alternative allows managers to focus on specific areas with resource concerns. SREI units which are unsatisfactory due to soil effects will recover as the ID Team identifies these areas and applies management options that allow for more rapid adjustment of grazing plans if initial corrective measures did not improve conditions as expected. Unsatisfactory SREI units will move towards a satisfactory condition for soil function at a faster rate than under alternative 2. The SREI units currently in satisfactory condition for soil function and stability will remain that way under the proposed action.

Plant succession from early- to mid- to late-successional species and plant re-growth will be slower than under the no-action alternative, but could be accelerated under this alternative compared to alternative 2. An adaptive management grazing strategy would result in satisfactory conditions in most areas and allow managers to use restorative activities where appropriate. Soil conditions are already improving with current grazing, but current grazing will slow recovery, and it is not clear how long it will take to get to satisfactory conditions. An adaptive management strategy would allow for faster recovery and increased flexibility.

The identified San Juan wetland, Mill Creek Watershed, and other identified reaches will move towards satisfactory conditions because grazing can be manipulated in the affected areas. There are no additional detrimental soil effects such as detrimental compaction or displacement expected from implementation of the proposed action.

One aspect of adaptive management would be for winter grazing when feasible on the Mill Creek Allotment. This would alleviate much of the potential for additional compaction of the soils in the meadows of Mill Creek and help the riparian zone improve. Frozen soils do not compact or erode as readily as unfrozen soils. However, care would need to be taken to ensure soils are frozen because wet soils compact and erode at a much higher rate than dry soils.

Cumulative Effects

Past, current and potential future activities in the analysis area include road construction and maintenance, timber harvesting, mining, and recreation. Since there are no detrimental direct or indirect effects from any of the alternatives, there are no anticipated cumulative effects from any alternatives on soil function or soil stability. There will remain to be isolated areas that are out of soil productivity. These will be concentrated on fence lines, corrals, salt sites, and water tanks. However, this constitutes a very small portion of the allotments, less than the regional standard of 15 percent reduced productivity.

3.8 Threatened, Endangered, and Sensitive (TES) Plant Species

3.8.1 Scope of the Analysis

The scope of this analysis discusses plants that are threatened, endangered, proposed, or Forest Service-designated sensitive. The analysis is restricted to the analysis area shown in chapter 1, map 1.

3.8.2 Past Actions That Have Affected the Existing Condition

There have been previous activities in this analysis area that may have affected TES plants and habitats. See the Rangeland and Recreation resources (section 3.4 and 3.5) for a description of previous actions relative to this analysis area.

3.8.3 Existing Condition

There are presently no reported records or suspected occurrences of threatened or endangered plants on this Forest. Threatened and endangered plants in Colorado have unique habitats or ranges that do not occur on this Forest. There are also no plants proposed for listing by the U.S. Fish and Wildlife Service (USFWS) that occur on the RGNF.

The analysis area does not contain any documented sensitive plant species. There are 17 sensitive plants suspected to occur in this analysis area based on habitat affinity (see table 3.8-1).

3.8.4 Direct, Indirect, and Cumulative Effects

The analysis below is a summary from a biological assessment/biological evaluation (BA/BE) for plants prepared specifically for this project. None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects.

Alternative 1 (No Permitted Livestock Grazing)

This alternative proposes no permitted livestock grazing or associated rangeland actions in support of livestock grazing permits. There would be no new management actions and foreseeable future actions are expected to have negligible effects on sensitive plants. There are no current activities that are known to be detrimentally impacting documented sensitive plant species. Therefore, there would be no direct or indirect effects anticipated on any known or suspected sensitive plant species or their habitats (table 3.8-1).

Table 3.8-1. Sensitive plant effects determination for the analysis area by alternative

Scientific Name	Determination ¹	
	Alternative	
	1	2 and 3
<i>Aquilegia chrysantha</i> var. <i>rydbergii</i>	NI	MAII
<i>Astragalus ripleyi</i>	NI	MAII
<i>Botrychium furcatum</i>	NI	MAII
<i>Cypripedium parviflorum</i>	NI	MAII
<i>Draba grayana</i>	NI	NI
<i>Draba smithii</i>	NI	NI
<i>Eriophorum altaicum</i> var. <i>neogaeum</i>	NI	MAII
<i>Eriophorum chamissonis</i>	NI	MAII
<i>Eriophorum gracile</i>	NI	MAII
<i>Gilia sedifolia</i>	NI	NI
<i>Machaeranthera coloradoensis</i>	NI	MAII
<i>Neoparrya lithophila</i>	NI	NI
<i>Penstemon degeneri</i>	NI	MAII
<i>Ranunculus karelinii</i> (<i>R. gelidus</i> ssp. <i>grayi</i>)	NI	NI
<i>Salix arizonica</i>	NI	MAII
<i>Salix serissima</i>	NI	MAII
<i>Utricularia minor</i>	NI	MAII

¹ NI = No Impact; MAII = May adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability range-wide.

Alternatives 2 and 3

Since both action alternatives propose some level of permitted livestock grazing, the effects are considered equivalent for this analysis (there is no real distinction of effects between alternatives for this particular analysis area). Known or potential habitat exists for 17 sensitive plants in the analysis area. Five species were judged to be at such low risk from the proposed actions that there would be no direct or indirect effect (table 3.8-1).

Thus, 12 species were judged to be potentially directly or indirectly affected. Direct effects could be from livestock directly grazing or trampling individual plants. Indirect effects could result from a change in surrounding forage canopy (through livestock grazing and/or trampling) that could be detrimental to individuals. Table 3.8-1 summarizes the effects determination made by alternative for these species. Implementing any livestock grazing action alternative would likely have a minimal impact on these plants by following project design criteria (table 2.5-1), including Forest Plan standards and guidelines and Watershed Conservation Practices Handbook pertinent to livestock grazing and rangelands.

Cumulative Effects

Cumulative effects consider a combination of effects such as recreation impacts, fuels management, timber management, big game populations, and livestock grazing on both private and Federal lands. However, the overall impact under the Forest's current land management is much less severe today than it was historically. There are no projects planned in the foreseeable future (next decade) in this analysis area that would be expected to significantly impact these

sensitive plants. See “Cumulative Effects” (section 3.18) for a comprehensive discussion of cumulative effects.

3.9 Threatened, Endangered, and Sensitive (TES) Wildlife Species

3.9.1 *Scope of the Analysis*

The scope of this analysis covers threatened, endangered, proposed, and Region 2 designated sensitive terrestrial wildlife. This analysis was conducted for various wildlife species at the following scales:

Canada Lynx: The analysis area is the 4-Mile to La Garita Creek Lynx Analysis Units (LAU). The LAU is described in greater detail in the South Saguache Biological Assessment.

All Other Terrestrial TES Wildlife Species: Due to limited habitat effects expected from any of the alternatives, all other species were analyzed within the boundaries of the analysis area shown in chapter 1, section 1.4, map 1.

This section summarizes a more detailed analysis contained in the wildlife biological assessment (BA) and biological evaluation (BE), management indicator species (MIS) and migratory bird report which are part of the project record.

3.9.2 *Past Actions That Have Affected the Existing Condition*

Wildlife habitat within the analysis area has been affected by mining, timber harvesting, livestock grazing, road construction, recreational activities, and habitat manipulation projects.

Historic logging operations were widespread and resulted in an extensive road system to facilitate operations. Recent timber harvest activities have been limited primarily to ponderosa pine salvage operations, the result of a mountain pine bark beetle outbreak.

Historic domestic livestock grazing within the analysis area included sheep, cattle, and horse grazing. Current livestock grazing is limited primarily to cattle and horse (see section 3.4 “Rangeland Resources” for more detail). Historic livestock grazing resulted in widespread overgrazing and negative impacts on soils and plant communities (Chaney 1990). Historic grazing-related activities that have also impacted wildlife and wildlife habitat include livestock forage improvement projects (sagebrush removal), willow removal projects, and water development projects.

Historic recreation activities within the analysis area included hunting, fishing, camping, hiking, backpacking, horseback riding, and packing. Most of these recreation activities had a relatively limited impact on wildlife. As the roads and unauthorized motor vehicle tracks have increased across the analysis area, so has erosion of soils, loss of vegetation, and loss of wildlife refuge.

3.9.3 *Existing Condition*

Cattle grazing within the analysis area occurs primarily in open parks, meadows, and riparian corridors.

Vegetation within the analysis area is diverse. In general, open parks and meadows are dominated by grass consisting of Arizona (*Festuca arizonica*) and Thurber fescue (*Festuca thurberi*), mountain brome (*Bromus carinatus*) and mountain muhly (*Muhlenbergia montana*). Riparian bottoms are generally narrow with steep slopes that are a mix of rock outcrops and spruce-fir and aspen stands. The riparian areas primarily support willow, alder, and aspen with occasional blue spruce. Herbaceous species consist of a large assortment of grass and broadleaf species. Timber stands include mostly mature ponderosa pine, mixed conifer, spruce-fir, lodgepole, and aspen. There are smaller areas dominated by pinyon-juniper communities at the lower elevations.

Overall, upland habitat is in good condition with most areas receiving only light to moderate use. Wildlife habitat conditions in the pinyon-juniper communities appear healthy. Upland range conditions within the analysis area have improved since the early 1900s. Riparian habitat conditions vary throughout the analysis area. Overall riparian habitat conditions throughout the analysis area are good and provide suitable habitat for wildlife. There are isolated sections where habitat conditions are not meeting desired conditions. These areas have been identified as key areas or benchmarks in the proposed action.

As discussed in section 3.4 “Rangeland Resources”, the analysis area was historically heavily grazed, the effects of which are still evident today. Historic grazing has rendered willow basal density inadequate and caused a herbaceous shift to Kentucky bluegrass reducing horizontal cover along riparian zones. These areas have been identified in the major drainages of the Carnero, California Gulch, and Cave allotments. Hummocks show evidence of heavy livestock use in many riparian areas; however, the majority of hummocks are historical and not active. There are stream sections where historic use has resulted in channel incisions that will likely remain for many years, but no active incising was identified. Beaver currently occupy the Cave Creek drainage and continue to alter hydrology and vegetation within the riparian zone. The willow and shrub communities in the Mill Creek drainage exhibit reduced age diversity and are dominated by older age classes. This drainage currently does not have beaver; however, their presence would likely improve riparian conditions.

There are drainages where elk periodically congregate during winter; these areas exhibit hedged willows and lower willow densities than expected. These areas have been identified in the Mill Creek, Sawlog, and Cave drainages, and drainages throughout the Carnero Allotment. These areas have been identified as key areas or benchmarks in the proposed action. There are 24,098 acres (18 percent of the analysis area) designated as deer and elk winter range management area (these areas are shown in chapter 1, map 2, as 5.41).

3.9.4 Direct and Indirect Effects

T&E Species: Grazing is expected to have no effect on the Mexican spotted owl and Uncompahgre fritillary butterfly due primarily to a lack of suitable habitat or occupancy within the analysis area. No direct effects are anticipated as a result of livestock grazing on Canada lynx. Potential indirect effects on lynx include grazing impacts on willow riparian habitat (secondary lynx habitat) which provides forage and cover habitat for snowshoe hare. The proposed alternative is expected to improve riparian habitat conditions for snowshoe hare and ultimately lynx as standards, guidelines, and design criteria are met within the analysis area.

No direct effects are anticipated as a result of grazing on southwestern willow flycatcher. Potential indirect effects include livestock grazing impacts on willows, which provide forage, nesting, and cover habitat for southwestern willow flycatcher. Potential impacts are discussed in

greater detail in the BA (available in the project record). The proposed alternative is expected to improve willow habitat conditions for southwestern willow flycatcher as standards, guidelines, and design criteria are met within the analysis area.

Sensitive Species: Grazing is expected to have no effect on the Great Basin silverspot butterfly, boreal toad, northern leopard frog, American three-toed woodpecker, bald eagle, black swift, burrowing owl, ferruginous hawk, flammulated owl, sage sparrow, Brewer's sparrow, Lewis's woodpecker, loggerhead shrike, olive-sided flycatcher, northern harrier, white-tailed ptarmigan, yellow-billed cuckoo, American marten, fringed myotis, Gunnison's prairie dog, New Mexico jumping mouse, Townsend's big-eared bat, or wolverine either due to a lack of occupancy within the analysis area or because project activities will have no effect on the species.

The Rio Grande cutthroat trout, Rio Grande chub, and Rio Grande sucker are discussed separately in the section 3.14 "Fisheries" and the fisheries BE (available in the project record).

Potential indirect effects on American peregrine falcon, boreal owl, and northern goshawk are primarily limited to grazing of riparian habitats. Riparian areas provide high quality prey species habitat. Livestock grazing may negatively impact prey species through direct competition for resources and/or alteration of habitat. Negative effects on prey populations from livestock grazing can reduce foraging success, fitness, and survival of these sensitive species. The proposed alternative is expected to improve prey species habitat and ultimately riparian foraging conditions for American peregrine falcon, boreal owl, and northern goshawk as standards, guidelines, and design criteria are met within the analysis area.

The Rocky Mountain bighorn sheep may experience some resource competition from livestock grazing, but cattle generally avoid the rough terrain preferred by bighorn sheep. Bighorn sheep are known, however, to occasionally experience habitat displacement in the presence of cattle (USDA-FS 2008a). Indirect effects may also include bighorn exposure to livestock diseases. The proposed alternative is expected to reduce the potential for negative effects on bighorn sheep as standards, guidelines, and design criteria are met within the analysis area.

Table 3.9-1. Summary of effects for threatened and endangered species by alternative for the analysis area

Species	Habitat	Alternatives		
		1—No Action (No Permitted Livestock Grazing)	2—Current Livestock Grazing Management	3—Adaptive Livestock Grazing Management
Canada lynx	Mixed conifer forests and aspen/willow/shrub-steppe	No Effect	MANLAA ¹	MANLAA
Mexican spotted owl	Steep canyons with a Douglas-fir, white fir, ponderosa pine/pinyon-juniper component	No Effect	No Effect	No Effect
Southwestern willow flycatcher	Riparian habitats along rivers, streams or other wetlands, where dense growths of willows or other shrub and medium-sized trees are present	No Effect	MANLAA ¹	MANLAA
Uncompahgre fritillary butterfly	Alpine habitat above 11,000 feet with a snow willow component	No Effect	No Effect	No Effect

¹ MANLAA = May affect, not likely to adversely affect.

Sensitive species evaluated as having “No Impact” as a result of project alternatives include: Great Basin silverspot butterfly, northern leopard frog, western boreal toad, American three-toed woodpecker, bald eagle, black swift, Brewer’s sparrow, burrowing owl, ferruginous hawk, flammulated owl, Gunnison sage-grouse, Lewis’s woodpecker, loggerhead shrike, mountain plover, northern harrier, olive-sided flycatcher, sage sparrow, white-tailed ptarmigan, yellow-billed cuckoo, American marten, fringed myotis, Gunnison’s prairie dog, Townsend’s big-eared bat, and wolverine. Those species evaluated as having a “May Impact” are summarized in table 3.9-2.

Table 3.9-2. Summary of effects for Region 2 sensitive species by alternative for the analysis area

Species	Habitat	Alternatives		
		1–No Action (No Permitted Livestock Grazing)	2–Current Livestock Grazing Management	3–Adaptive Livestock Grazing Management
Birds				
American peregrine falcon (<i>Falco peregrinus nataum</i>)	Cliff habitat over 200 feet high with suitable ledges for nest construction	NI	MI	MI
Boreal owl (<i>Aegolius funereus</i>)	Mature spruce/fir and mixed conifer forested areas with preference for wet situations (bogs or streams) for foraging	NI	MI	MI
Northern goshawk (<i>Accipiter gentiles</i>)	Mature forest generalist; on the RGNF, often found in mixed conifer/aspen stands; primarily nests in mature aspen locally	NI	MI	MI
Mammals				
Rocky Mountain bighorn sheep (<i>Ovis canadensis canadensis</i>)	Rocky cliffs with adequate forage, water, and lambing grounds within mountainous country	NI	MI	MI

NI = No Impact.

MI = May impact individuals, but is not likely to cause a trend towards Federal listing or result in loss of viability in the planning area.

BI = Beneficial Impact.

LI = Likely to result in a trend towards Federal listing or loss of viability in the planning area.

A more in-depth review of this analysis is available in the South Saguache Range Management BA and BE, which may be found in the project record.

Alternative 1 (No Permitted Livestock Grazing)

Under this alternative, there would be no competition for resources or potential for disturbance of TES or wildlife habitat as a result of livestock grazing or associated management activities. Riparian and upland vegetation would potentially be more abundant, thus increasing forage availability and cover for wildlife.

Alternative 1 would produce the least impact on wildlife and wildlife habitat resulting from grazing activity. No herbivory or other disturbances such as displacement would occur, and potential human disturbances associated with cattle grazing would cease. Herbivory would primarily result from recreation livestock, outfitter and guide livestock, and wildlife. Vegetative structure and composition would increase, improving avian and small mammal riparian habitat conditions. As range improvements were removed, risks to wildlife from livestock structures would cease.

Riparian habitats important to Canada lynx, southwestern willow flycatcher, American peregrine falcon, boreal owl, flammulated owl, and northern goshawk would be expected to meet desired conditions, due to decreased grazing pressures and other influences such as trampling and trailing by cattle.

Alternative 2 (Current Livestock Grazing Management)

This action alternative would continue current grazing patterns and herd management, likely resulting in the continuation of the current trend in vegetative condition. Effective management of livestock would be limited and desired riparian condition might not be achieved in some areas. It would therefore be less likely that desired conditions and objectives for terrestrial wildlife habitat within the analysis area would be achieved. Flexibility to modify livestock grazing management as a result of resource monitoring or new information would be limited.

Alternative 3 (Adaptive Livestock Grazing Management)

Alternative 3 provides increased flexibility to modify management direction if monitoring indicates the need for change. Rapid changes to livestock grazing management, in response to changing resources, would likely have an increased beneficial effect on threatened, endangered and sensitive (TES) species and their habitat.

Forest Plan standards, guidelines, and project design criteria (chapter 2, section 2.8) are intended to ensure Forest-wide desired conditions and objectives for terrestrial habitat are being achieved. In addition, specific resource objectives, such as lowering willow utilization, increasing streambank stability and wetland condition, would more likely be met in acceptable timeframes. Alternative 3 has a greater potential for achieving desired habitat conditions for wildlife, while still allowing permitted livestock grazing, than alternative 2. It is expected that impacts on wildlife and their habitat will be reduced under alternative 3 due to Forest Plan standards, guidelines, design criteria, greater management flexibility, and increased utilization monitoring.

3.9.5 Cumulative Effects

Alternatives 1 and 2 are not expected to create any cumulative effects. The proposed action is expected to create short-term disturbance resulting from the proposed range improvements. In addition, increasing upland livestock distribution and utilization may have mixed impacts on upland habitats, improving some areas while increasing use on others. However, reducing the impact on riparian habitats is a substantial benefit to wildlife due to the value of riparian habitat. Therefore, no cumulative effects are expected under the adaptive management alternative as standards, guidelines, and design criteria are met.

3.10 Wildlife

3.10.1 *Scope of the Analysis*

This section addresses non-TES wildlife and is organized by Management Indicator Species (MIS) and Migratory Birds. These sections are a summary of the MIS report and the migratory bird assessment (USDA 2005) included in the project record. MIS are representative species selected to assess the effects of management activities on a cadre of similar species and their habitat. MIS were selected and are monitored to help demonstrate that the Forest Plan is providing for viable wildlife populations, since these species are believed to indicate the effects of management activities for similar species. Management direction specific to MIS on the RGNF is that activities will be managed to avoid loss of population viability. Population changes in MIS are analyzed at various scales with an over-arching tie to population viability at the Forest level. Habitat conditions for MIS are also assessed at different spatial scales, but their combination is analyzed at the Forest level.

The RGNF has nine MIS: Six species would be potentially affected by project activities due to habitat and management associations, and are therefore analyzed for project effects. The six MIS evaluated in detail for this analysis include: (1) Rio Grande cutthroat trout, (2) Lincoln's sparrow, (3) Wilson's warbler, (4) vesper sparrow, (5) mule deer, and (6) elk. The remaining species or their habitat would not be affected by project activities. The species not analyzed for this project included the brown creeper, hermit thrush, and pygmy nuthatch.

Migratory birds analyzed for this project are listed under the USFWS Birds of Conservation Concern (BCR) for BCR 16 and physiographic area 62 of the Colorado Partners in Flight Bird Conservation Plan. Additional information on BCR 16 is available online at: <http://www.nabci-us.org/bcrs.html>

3.10.2 *Past Actions that Have Affected the Existing Condition*

Past actions that have affected the existing condition for MIS, migratory birds, and wildlife in general are the same as described above under section 3.9.

3.10.3 *Existing Condition*

General information regarding the existing conditions for MIS, migratory birds, and wildlife in general are the same as described above under section 3.9 of this document. More specific information regarding MIS can be found in appendix E.

3.11 Management Indicator Species (MIS)

3.11.1 *Direct and indirect Effects*

Direct effects on deer and elk are limited to potential risks resulting from fence developments. However, population levels do not indicate that fencing has a significant effect on the population within the analysis area. Indirect effects on deer and elk may include competition for resources. Indirect effects on Lincoln's sparrow, Wilson's warbler, and vesper sparrow include livestock utilization of nesting, foraging, and cover habitat. Lincoln's sparrow and Wilson's warbler are primarily riparian-dependant species. Willows and herbaceous residuals provide essential habitat components necessary for the survival and successful reproduction of these two MIS. Livestock grazing can negatively impact these habitat components either through consumption or alteration. Reductions in horizontal density of willows can have a negative effect on foraging

habitat for Wilson's warbler and to a lesser extent Lincoln's sparrow. In addition, extensive reductions in herbaceous residuals can degrade nesting habitat conditions for Wilson's warbler, Lincoln's sparrow, and vesper sparrow, which are all ground nesting species. Current trend information shows increasing population numbers for Lincoln's sparrow and vesper sparrow within the analysis area. However, Wilson's warbler numbers within the analysis area are currently below Colorado averages (Blakesley 2008).

Alternative 1 (No Permitted Livestock Grazing)

There would be no direct impacts to MIS resulting from livestock grazing or associated management under this alternative. Indirect effects would include increased riparian vegetation, thus increasing forage availability and cover habitat for riparian-dependent wildlife. Upland habitats would be expected to produce greater species diversity of plants and increased hiding cover for small mammals, reptiles, birds, and other wildlife species under alternative 1.

Alternative 2 (Current Livestock Grazing Management)

There would be no direct impacts to MIS resulting from livestock grazing or associated management under this alternative. Indirect effects include potential impacts to nesting, foraging, and hiding habitats due to livestock grazing of Lincoln's sparrow, Wilson's warbler, and vesper sparrow habitat.

The current livestock grazing alternative would continue current grazing patterns and herd management activities. This would likely result in the continuation of current trends in vegetative condition and MIS populations. Flexibility to modify livestock grazing management as a result of resource monitoring or new information in a timely manner would be limited. Management limitations would make it difficult to address known areas of concern or reach Forest desired condition.

Alternative 2 is not expected to achieve all habitat goals for MIS within the analysis area and would likely contribute to a static trend and possibly even contribute to a downward trend at the Forest level for Wilson's warbler.

Alternative 3 (Adaptive Livestock Grazing Management)

Alternative 3 employs many of the same management tools as alternative 2, but allows greater flexibility in their application. Areas of concern or changing environmental conditions could quickly be addressed in a manner that would minimize resource impacts. There are no direct effects on MIS resulting from livestock grazing under this alternative. Indirect effects would include increased riparian vegetation, thus increasing forage availability and cover habitat for riparian-dependent wildlife.

The adaptive management alternative is expected to result in an upward trend in MIS habitat conditions within the analysis area and stable to increasing MIS populations at the Forest-level as Forest Plan standards, guidelines, and design criteria are met within the analysis area.

3.11.2 Cumulative Effects

While overall upland range conditions are in good to excellent condition, some of the riparian zones in the analysis area show historic degradation and in some cases current overutilization. Roads and poorly designed culvert installations have also contributed to fragmentation and stream sedimentation, respectively. Historic fire suppression has resulted in a widespread lack of

age diversity among plant communities. All of these actions have impacted habitat conditions within the analysis area. However, the proposed alternative is designed to improve livestock management and reduce riparian utilization through favorable season of use, increased stubble heights and rest.

A majority of the range improvements planned under the proposed alternative are expected to result in small short-termed habitat disturbances, which pose no risk to wildlife. However, fencing has the potential to entangle deer and elk and separate fawns and calves from adults. To mitigate this risk as much as possible, wildlife-friendly fence designs will be applied within the analysis area. Overall, no cumulative effects are expected under the adaptive management alternative as standards, guidelines, and design criteria are met.

3.12 Migratory Birds

Direction concerning bird conservation in Region 2 is to reference the USFWS 2002 Birds of Conservation Concern by Bird Conservation Regions (BCRs) when completing NEPA evaluations for project activities. The RGNF occurs within the Southern Rockies Colorado Plateau BCR 16, which encompasses portions of Colorado, New Mexico, Arizona, Utah, and Wyoming. Information from BCR 16 was synthesized for use in Colorado through the development of the Birds of Conservation Concern list and the Colorado Landbird Conservation Plan (BCP). For the purposes of this analysis, migratory birds were analyzed by tiering to the Forest's migratory bird report (USDA 2005), the 2002 Birds of Conservation Concern list, and referencing the BCP.

This report summarizes the priority habitats and species of birds (from the 2002 list and the BCP) relevant to this analysis area. Some species may be assessed at the fine-filter level because they are also analyzed in the BA, BE, or MIS reports prepared for this project and included in the project record.

The USFWS birds of conservation concern for BCR 16 include: northern harrier, Swainson's hawk, ferruginous hawk, golden eagle, peregrine falcon, prairie falcon, Gunnison sage-grouse, snowy plover, mountain plover, solitary sandpiper, marbled godwit, Wilson's phalarope, yellow-billed cuckoo, flammulated owl, burrowing owl, short-eared owl, black swift, Lewis's woodpecker, Williamson's sapsucker, gray vireo, pinyon jay, Bendire's thrasher, Crissal thrasher, Sprague's pipit, Virginia's warbler, sage sparrow, and chestnut-collared longspur. All of these species either have no habitat within the analysis area or have been previously addressed as a sensitive species (except Virginia's warbler).

Virginia's warbler is primarily a scrub oak species, but is also known to nest in riparian zones. In addition, they generally move to riparian habitats following fledging. As a ground-nesting species, trampling is a potential danger for this warbler. Willow density is also related to foraging success. Forest Plan standards, guidelines and the proposed action's design criteria are expected to reduce potential impacts to Virginia's warbler.

Summary of Effects on Migratory Birds: All seven of the priority habitats identified in the Colorado Landbird Conservation Plan for the Southern Rocky Mountains Province (Beidleman 2000) occur within the South Saguache Range Analysis Area. Overall, grazing is a relatively low impact activity for forest birds. However, grazing can and has impacted habitat for several riparian bird species in localized areas. Two detrimental effects are the loss of horizontal density and density of willows communities. Willows provide nesting habitat, hiding cover, and foraging habitat. Reductions in willow plant and horizontal density can compromise the suitability of

riparian habitat for numerous passerine species and reduce the reproductive success of the more riparian-dependent bird species.

Nine of the Bird of Conservation Concern for BRC 16 can potentially be found within the South Saguache Range Management Analysis Area. Livestock grazing is expected to have no effect on birds found in aspen, cliff/rock, mixed conifer, ponderosa pine, and spruce-fir habitats. However, historic and current livestock grazing has degraded habitat conditions in some areas for riparian bird species.

Alternative 1 (No Permitted Livestock Grazing)

Alternative 1 would have the greatest potential to achieve optimum habitat conditions for most migratory birds of concern, with the exclusion of permitted livestock grazing within the analysis area. Overall upland vegetation condition would be expected to attain desired condition for migratory birds. Alternative 1 would likely result in improved habitat conditions for most migratory bird species. The removal of range improvements (water developments and fencing) would likely have little impact on migratory bird species within the analysis area.

Alternative 2 (Current Livestock Grazing Management)

Alternative 2 would be expected to continue current habitat conditions for migratory bird species and/or priority habitats within the analysis area. Alternative 2 would be expected to maintain current migratory bird population trends within the analysis area. Forest species are not expected to be affected by grazing activities. Alternative 2 would not be as responsive and flexible as alternative 3 to possible management changes needed to address concern areas and conserve migratory birds.

Alternative 3 (Adaptive Livestock Grazing Management)

Adaptive management will provide flexibility that should result in an increased likelihood of effectively meeting Forest objectives. Project design criteria (see chapter 2, section 2.8), increased livestock distribution, management flexibility, and range improvements are expected to increase riparian habitat condition for migratory birds. This alternative would increase management responsiveness if changes were needed based on monitoring and new information. Overall, the effects of alternative 3 would be expected to conserve migratory birds and their habitats as adaptive management is implemented and standards, guidelines, and design criteria are met.

3.12.1 Cumulative Effects Common to all Alternatives

Note: The following cumulative effects are for TES, MIS, and Wildlife Resources.

Historical composition, distribution, and abundance of wildlife species and habitat have likely changed across the entire analysis area since Euro-American settlement, which took place in approximately the mid-1870s. Several factors have contributed to these changes including: logging, road construction, grazing of domestic livestock, hunting/trapping pressures, forest insect and disease outbreaks, wildlife disease outbreaks, extirpation of large predators, non-native plant introductions, widespread erosion, wildfire suppression, human development, and other anthropogenic influences. All of these activities have had an effect on the native plant communities within the analysis area. As a result, wildlife and TES resources have also been impacted, and in some cases, continue to show effects today.

Within the analysis area, the greatest overall threats to wildlife are: loss or degradation of suitable habitat to development of private lands, events that affect large geographic areas or populations, such as catastrophic fire and disease (i.e., chronic wasting disease, West Nile virus), improper livestock grazing, road building, and increasing recreational use of public lands.

Changes in plant communities have resulted in alteration of habitats for riparian-dependent wildlife species, especially in areas where multiple impacts such as road construction, improperly managed livestock grazing, and trapping of beaver have been intense. For the most part, altered riparian areas are lower elevation willow communities with relatively flat topography. However, in many instances, these areas are currently showing improvement.

Alternative 1 (No Permitted Livestock Grazing)

Effects of the no livestock grazing alternative on uplands would be reduced competition for forage and cover habitat for wildlife. Plant residual cover for small mammals and ground-nesting birds would likely increase within the analysis area. Areas of high livestock impact (stock water tanks, fence lines, spring developments, stock driveways, etc.) would be expected to fully recover.

Aquatic and riparian avian species habitat would likely improve as a result of improved stream and riparian habitat conditions. Several passerine, raptor, and carnivore species would be expected to benefit from increasing herbaceous residuals and willow densities within riparian zones, providing additional prey species (insects, birds, microtines, and hares) habitat and foraging opportunities.

Alternative 2 (Current Livestock Grazing Management)

Alternative 2 would likely be a continuation of current habitat conditions. Management options would be limited to respond to situations where there is an identified need to minimize conflicts between livestock and specific TES/MIS/Wildlife species or their habitat.

Herbaceous upland residuals would likely remain near current levels, providing adequate upland cover for both small mammals and ground nesting birds within the analysis area.

Aquatic and riparian avian species would likely remain at current population levels. Prey (insect and small mammal) abundance for several passerine, raptor and carnivore species may be less than expected for riparian zones within the analysis area.

Alternative 3 (Adaptive Livestock Grazing Management)

Adaptive management practices would be better able to respond to situations where there is an identified need to minimize conflicts between livestock and specific TES/MIS/Wildlife species or habitats.

Wilson's warbler would potentially increase within the analysis area as a result of improved management and reduced utilization of riparian zones (Blakesley 2008). In addition, several passerine, raptor, and carnivore species would be expected to benefit from improving riparian habitat conditions.

3.13 Fisheries

3.13.1 *Scope of the Analysis*

This analysis discusses fisheries and aquatic habitat and is confined to the analysis area shown in chapter 1, map 1.

3.13.2 *Past Actions That Have Affected the Existing Condition*

Past actions that may have affected fisheries within the analysis area are: (1) habitat alteration due to livestock grazing and recreation activities, (2) over-harvest of fish, and (3) stocking of nonnative fish. These actions would have influenced the species of fish present; distribution of fish populations; and various population parameters, including age structure (size classes), density (number of fish/acre), biomass (pounds of fish/acre), and relative abundance (percentage of a species within a collection of species).

Some riparian areas around popular streams within the analysis area have been impacted by livestock and recreational use. Historic livestock grazing altered stream geomorphology, riparian species composition, and soil characteristics. Past livestock grazing activities and watershed conditions are discussed in sections 3.4 and 3.6, respectively. The principal recreational impact has been the direct harvesting of fish, although indirect impacts to fish habitat in some areas have resulted from loss of riparian vegetation and compaction of soils, resulting in increased sedimentation in some streams (USDA Forest Service 1996b). Recreational activities were discussed in section 3.5.

The analysis area is within the estimated historic range of native Rio Grande cutthroat trout. Overharvest, habitat degradation, and introduction of nonnative trout contributed to the reduction of Rio Grande cutthroat trout distribution throughout their estimated historic range. Introduced brook trout tend to out-compete native Rio Grande cutthroat trout for food and space and have replaced many native fish populations within the analysis area. Rainbow trout and other nonnative cutthroat trout subspecies have hybridized with Rio Grande cutthroat trout and have produced fertile offspring resulting in loss of Rio Grande cutthroat trout, genetic integrity, and their unique physical appearance (CDOW 2004).

3.13.3 *Existing Condition*

Overall, streams within the analysis area are stable, with well-developed adequate-to-robust riparian areas that are capable of supporting wild populations of native and desirable nonnative trout species. There are isolated stream reaches that are being impacted by livestock grazing and/or recreation activities (see section 3.6 “Watershed and Aquatic Resources”). Impacts to fish populations attributed to livestock grazing activities have been identified.

Isolated stream reaches in Middle Fork Carnero Creek and Cave Creek have been identified as having increased siltation that appears to be impacting Rio Grande cutthroat trout reproduction and population recruitment. A downward trend in Rio Grande cutthroat trout population density and biomass has continued since 2001 in these streams. Sediment sources may include stream bank degradation from permitted livestock grazing and wildlife use; as well as runoff from roads and beaver activity. Detailed information on populations status is included in the biological evaluation (BE) prepared for this project.

The analysis area supports core populations of native Rio Grande cutthroat trout in North Fork Carnero Creek, Prong Creek, Cave Creek, Miners Creek, and Big Springs Creek. Conservation core populations are found in South and Middle Forks of Carnero Creek.

The native Rio Grande sucker has been introduced into Middle, North, and South Forks of Carnero Creek, and Big Springs Creek. The North and Middle Fork of Carnero Creek were first stocked in 1998, Big Springs Creek in 2003, and South Fork of Carnero Creek in 2008. Multiple stockings have occurred since the initial stockings, but no populations have become established in any of the streams.

Brook and brown trout currently co-exist with Rio Grande cutthroat trout in South Fork Carnero Creek, Cave, Miners, and Prong creeks. These nonnative salmonids pose a threat to Rio Grande cutthroat trout existence because they compete for space and food. In 2008, the USFWS determined that listing the Rio Grande cutthroat trout as a Federal candidate species was warranted due to a combination of factors including their limited distribution and widespread presence of nonnative trout in existing historical Rio Grande cutthroat trout waters.

3.13.4 Direct, Indirect, and Cumulative Effects

Improper livestock management can potentially degrade riparian and aquatic habitats in a variety of direct and indirect ways (Platts 1991). A BE addressing these effects on Forest sensitive fish species has been prepared and placed in the project record. None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects to Forest sensitive fish species.

Alternative 1 (No Permitted Livestock Grazing)

This alternative proposes no permitted livestock grazing or associated rangeland actions in support of livestock grazing permits. There would be no impacts from permitted livestock to stream health or fish populations from this alternative. Habitat that has been impacted under historic or current management would recover with rest. Existing watershed and stream conditions would improve over time and the fish populations would remain stable or show improvements in population parameters (i.e., age structure, density, biomass, population numbers) as they near stream carrying capacities where livestock impacts have impacted riparian conditions. There would be no direct, indirect, or cumulative effect anticipated on fish populations or their habitats.

Alternative 2 (Current Livestock Grazing Management)

This alternative proposes to maintain the current livestock grazing system to address biological and physical concerns related to Rio Grande cutthroat trout habitat. Direct effects to fish include permitted livestock stepping on individual fish and/or destroying trout redds. Indirect effects could result from a change in riparian canopy (through livestock grazing and/or trampling) that could reduce shade or escape cover; to degrading stream banks resulting in loss of spawning or pool habitat due to increased sedimentation. This alternative would limit management flexibility in livestock grazing distribution patterns and livestock management, and would be less likely to improve vegetation complexity and structure in a timely manner. Riparian habitat concerns would be managed through AOIs possibly resulting in minor habitat improvements over time. This alternative provides minimal management flexibility to respond to existing impacts on the fisheries and would likely continue a downward trend in Rio Grande cutthroat trout populations.

Alternative 3 (Adaptive Livestock Grazing Management)

The adaptive management alternative provides greater management flexibility to respond to changes in resource conditions and provides the best opportunity to maintain and improve riparian/stream complexity and structure while still permitting grazing. Key area and benchmark monitoring would identify if resource conditions were moving toward or meeting Forest Plan desired conditions, or would identify problem areas so corrective actions could be implemented in a timely manner.

Management actions would be implemented annually to respond to changing conditions and needs. The ability to respond to changes in environmental conditions in a timely manner would benefit fish populations by changing grazing activities that may be affecting sedimentation, riparian canopy cover, stream flows, and geomorphology. Applying flexibility in timing and duration of permitted livestock grazing, as well as other adaptive management actions identified in chapter 2, (table 2.4-4), would allow more rapid modification of livestock grazing plans when grazing impacts are identified.

This alternative provides the greatest opportunity to respond to areas not meeting desired conditions by establishing and monitoring benchmark areas. The impacts to stream health and overall fish populations would be minimal with implementation of Forest Plan standards and guidelines, Watershed Conservation Practices Handbook, and proposed project design criteria. It is expected that the implementation of the project design criteria and utilization of adaptive management actions will minimize sediment inputs into these two streams from permitted livestock grazing. More rapid recovery would be expected using adaptive management verses current management, although not as quickly as the no permitted livestock grazing alternative. Considering the action alternatives, this alternative provides the best opportunity to respond to changes in riparian and stream habitat and therefore improve habitat and sustain fish populations.

Cumulative Effects

Cumulative effects could result from a variety of management practices such as timber harvest, road use, improper livestock grazing, recreational use that individually could impact fish, but when combined could magnify impacts. Roads, beaver and ungulate activity are sources of fine sediments on some stream reaches where they are located near stream channels such as Mill and Cave creeks. However, the overall impact under the Forest's current land management is less severe today than it was historically. There are no projects planned in the foreseeable future (next decade) in this analysis area that would be expected to significantly impact fisheries resources. See "Cumulative Effects" (section 3.18) for a comprehensive discussion of cumulative effects.

3.14 Scenic Resources

3.14.1 *Scope of the Analysis*

This analysis discusses scenic integrity of the landscape. The analysis is restricted to the analysis area shown in chapter 1, map 1.

3.14.2 *Past Actions That Have Affected the Existing Condition*

The analysis area for scenic resources has been identified in the existing scenic integrity inventory as "type I" through "type V" due to the large area included. Existing scenic integrity maps have areas within the analysis area identified as type I or "unaltered." However, due to

multi-use by timber, range, and recreation, there are scenic deviations on the landscape from an experiential viewpoint (as viewed on the ground) that are mapped as type II through type V. The most evident deviations are from past timber harvesting activities around the Mountain Lion and Squaw Creek areas.

3.14.3 Existing Condition

There are many recreational activities in the analysis area including campgrounds, trailheads, and designated motorized off-road vehicle areas. The roads and trails located in the analysis area have been given a “concern level 1 and 2”, due to the amount of recreation visitors. A concern level 1 and 2 indicates that visitors have a high to moderate concern respectively for the scenery in this area.

The majority of suitable range included in the analysis area has scenic integrity objectives of “moderate” and “high”. A scenic integrity objective of moderate refers to landscapes where the valued landscape character appears slightly altered, and high refers to landscapes where the valued landscape character appears intact. There are some small areas near Boland Canyon, Tracy Mountain, and Sawlog Creek on the eastern portion of the analysis area adjacent to BLM lands where the scenic integrity objective is “low”.

Livestock grazing has occurred in the analysis area for over 100 years, and has become part of the characteristic landscape. Many visitors have become accustomed to seeing, hearing, and encountering grazing animals and associated management activities over the last 100 years. Grazing may be considered as part of the cultural aspect of this landscape based its long history; however, some recreation visitors are becoming more opposed to encountering domestic livestock—this contentiousness is expected when grazing and recreation use overlap.

3.14.4 Direct, Indirect, and Cumulative Effects

None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects.

Alternative 1 (No Permitted Livestock Grazing)

This alternative would have no adverse impacts to scenic resources since there would be no permitted livestock grazing. There would continue to be very little to limited impacts to scenic resources from existing outfitter guides and recreation visitors in the analysis area viewsheds. Viewers could expect to see outfitter guide camps, other recreation visitor camps and activities, and recreation livestock only. It is expected that the characteristic landscape would remain intact with minor insignificant deviations based on viewshed perspectives concerning the aforementioned users.

Effects Common to All Action Alternatives

Alternatives 2 and 3 would have no impact to scenic resources because grazing has occurred in this area historically. Viewers may expect to see some changes to the characteristic vegetation due to changes in grazing management, but changes are not expected to dominate the landscape. Grazing activities may potentially offer an opportunity to rehabilitate past actions that have impacted the landscape. The action alternatives discussed in the analysis area would have no significant impacts to concern areas for the scenic resources, because there would only be slight deviations on the ground such as trails, other forest visitors, and livestock.

Alternative 2 (Current Livestock Grazing Management)

Under alternative 2, viewers could expect to see conditions as they currently exist, which includes the alterations on the landscape associated with livestock grazing. The characteristic landscape would likely remain intact with minor deviations.

Alternative 3 (Adaptive Livestock Grazing Management)

Alternative 3 is expected to have less impact on the scenic resource than alternative 2, due to the increased management flexibility. Additional infrastructure constructed will implement project design criteria to minimize impacts to scenic values.

Cumulative Effects

See “Cumulative Effects” (section 3.18) for a comprehensive discussion of cumulative effects.

3.15 Heritage Resources

3.15.1 *Scope of the Analysis*

The scope of this analysis focuses on the potential impacts to heritage resources located in the South Saguache Analysis Area (chapter 1, map 1). Forest Service policy (FSM 2361.3) requires that all areas slated for ground-disturbing activities be surveyed for heritage resources in order to comply with 36 CFR 800; the National Historic Preservation Act of 1966, as amended; the Archeological Resources Protection Act (NHPA) of 1979; the American Indian Religious Freedom Act (1979); and the Native American Graves Protection and Repatriation Act (1992). A detailed analysis is also documented in a section 106 National Historic Preservation Act (NHPA) report to be sent to the Colorado State Historic Preservation Office (COSHPO) for consultation. The report and consultation correspondence are included in the project record.

3.15.2 *Past Actions That Have Affected the Existing Condition*

The most notable past action that has affected heritage resources within the analysis area is the intense livestock grazing that has occurred in the past 100 years. Other actions that have impacted heritage resources include illegal use of closed roads, dispersed camping, road construction, historic Civilian Conservation Core (CCC) erosion control measures, and illegal artifact collection and vandalism of heritage sites.

3.15.3 *Existing Condition*

A pre-field literature search indicated 13 previous heritage resource inventories were conducted within the analysis area totaling 43,418 acres. These surveys indicate a moderate to high site density within most of the analysis area, the higher potential site density being in the lower elevations. There are a total of 47 significant previously documented heritage resources in the analysis area that are either eligible to the National Register of Historic Places (NRHP) or they are currently unevaluated, but require the same consideration as eligible sites. The majority of these sites was recorded 10 to 20 years previous. Overall, the majority of the significant archaeological sites are stable (60 percent) or are in better condition than their previous recordings (27 percent), especially in the Houselog Allotment and the California Gulch Allotment along Mountain Lion Creek in the north end of the Cow Camp Pasture and along West Park Creek. A small portion of sites were heavily impacted (13 percent), predominantly in the

Mill Creek and California Gulch allotments. Specific project design criteria have been developed to minimize or eliminate further impacts to these sites.

3.15.4 *Direct, Indirect, and Cumulative Effects*

None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects.

Alternative 1 (No Permitted Livestock Grazing)

Removal of permitted livestock grazing would eliminate the potential for direct and indirect effects to heritage resources from livestock grazing in the analysis area. There would be no livestock to incur trampling, compaction, obliteration, or displacement of artifacts or features. No new erosion caused by livestock grazing and no potential for the destruction of archaeological contexts due to erosion created from livestock grazing, particularly to unevaluated sites and unidentified sites in unsurveyed areas. If there is no Federal action, then there is no undertaking, as defined in 36 CFR 800.2(o), for section 106 of the National Historic Preservation Act (16 U.S.C. 470f).

Effects Common to All Action Alternatives

Livestock grazing has the potential to directly impact heritage resources through trampling, compaction, obliteration, or displacement of artifacts or features. Any heritage resources located near watering areas, salt or mineral block areas, along fence lines, and where livestock congregate, are considered the most vulnerable to impacts from grazing activities. Potential indirect impacts from the proposed action may include the destruction of archaeological contexts due to erosion created from livestock grazing, particularly to unidentified sites in unsurveyed areas with high potential. Potential indirect impacts from the proposed action, such as artifact collection, site vandalism, on the unsurveyed portions of the analysis area are not expected to increase.

Alternative 2 (Current Livestock Grazing Management)

Current livestock management would result in no new surface disturbances in the analysis area and riparian areas would continue to be grazed at current utilization levels where site potential is the highest. There would be no increases in direct or indirect impacts to heritage resources. Sites that are experiencing impacts will continue to be impacted. These impacts could be dealt with through minor changes in AOIs, but would delay achievement of desired conditions due to less management flexibility to respond to changing environmental and social conditions. Livestock grazing distribution patterns and herd management, and would be less likely to improve vegetation complexity and structure which is important in the protection of buried archaeological deposits and site matrices.

Alternative 3 (Adaptive Livestock Grazing Management)

Adaptive livestock grazing management allows increased flexibility to respond to areas where current range conditions are less than desired. The increased flexibility to utilize adaptive management actions (table 2.4-4) would allow more rapid management adjustments to respond to resource needs and more rapid recovery would be expected than under current management (alternative2), although not as quickly as no permitted livestock grazing (alternative 1). An improvement in range condition would benefit undocumented, unevaluated, and eligible sites that require stable soil and vegetation regimes for their protection.

Applying flexibility in timing and duration of permitted livestock grazing or other adaptive management actions (i.e., fencing) would allow more rapid adjustment of livestock grazing plans if impacts were found on specific archaeological sites.

Establishment and monitoring of key areas and benchmarks would provide information about resource conditions that would identify if conditions were moving toward or meeting Forest Plan desired conditions or would identify problem areas so corrective actions could be implemented in a timely manner.

In areas where site context conditions were less than satisfactory, more rapid recovery would be expected with adaptive management than under current management (alternative 2), although not as quickly as no permitted livestock grazing (alternative 1). Compliance with specific project design criteria would help ensure Forest-wide desired conditions and objectives, and the intent of section 106 of the National Historic Preservation Act (NHPA) would be met.

Cumulative Effects

In the absence of livestock grazing, cumulative effects would decrease for all allotments. Under action alternatives, the loss of archaeological resources has occurred in the past and will occur in the future. The cumulative effect is that over time fewer archaeological resources will be available to learn about past human lifeways, to study changes in human behavior through time, and to interpret the past to the public. Heritage resource inventory, recording, evaluating and archiving basic information about each site for future reference serves to minimize potential effects to heritage resources. In conjunction with livestock grazing, recreation activities, new and existing roads, previous and current logging activities, and historic cattle/sheep grazing have the potential to cause ground disturbance leading to cumulative, long-term, irreversible adverse effects to heritage resources. See “Cumulative Effects” (section 3.18) for a comprehensive discussion of cumulative effects.

3.16 Noxious Plants

3.16.1 *Scope of the Analysis*

This section discusses invasive plants that have been designated as “noxious weeds” by the State of Colorado (available on the internet at:

<http://www.ag.state.co.us/CSD/Weeds/statutes/weedrules.pdf>. The focus of this analysis is on the analysis area (see chapter 1, map 1).

3.16.2 *Past Actions That Have Affected the Existing Condition*

Past ground-disturbing activities typically provide noxious plants an opportunity to establish and spread. Activities such as construction, travel routes, and recreation all disturb the ground. Ultimately, wildlife, livestock, machinery, recreational vehicles, people, wind, and water transport seeds from existing infestations to new sites. The analysis area has a complex road and trail network that can potentially facilitate the transport of invasive plants by people, wildlife, or livestock. Past activities relevant to ground disturbance and noxious plants are included in the chapter 3 sections on “Rangeland Resources” (section 3.4), “Recreation” (section 3.5), “Watershed and Aquatic Resources” (section 3.6), and “Soil Resources” (section 3.7) under this same heading.

3.16.3 Existing Condition

Noxious plants occur within the RGNF and within Saguache County. An inventory of noxious plant species has been completed and is ongoing within the analysis area. Noxious plants documented in the analysis area include: Canada thistle (*Cirsium arvense*), perennial pepperweed (also known as tall whitetop) (*Lepidium latifolium*), yellow toadflax (*Linaria vulgaris*), purple loosestrife (*Lythrum salicaria*), black henbane (*Hyoscyamus niger*), Russian knapweed (*Acroptilon repens*), and downy brome (also known as cheatgrass) (*Bromus tectorum*). The majority of the known noxious plant occurrences are located in disturbed areas including the sides of roads, at trailheads, along recreation trails, or within past timber sale areas. There are limited isolated occurrences within the analysis area in undisturbed areas.

The following noxious plant species are found outside of the analysis area: musk thistle (*Carduus nutans*), hoary cress (also known as whitetop) (*Cardaria draba*), oxeye daisy (*Chrysanthemum leucanthemum*), leafy spurge (*Euphorbia esula*), houndstongue (*Cynoglossum officinale*), and common mullein (*Verbascum thapsus*).

Monitoring and treatment of known noxious plant occurrences occurs annually on the analysis area and other lands managed by the Saguache Ranger District. Noxious plants are systematically listed and targeted for priority management by the Forest Service on an annual basis according to the Forest's noxious plant programmatic EA (USDA Forest Service 2008b). The direct or indirect effect of the presence of these plants is detrimental to the environmentally sound management of natural ecosystems.

3.16.4 Direct, Indirect, and Cumulative Effects

None of the alternatives would be expected to result in direct, indirect, or cumulative effects.

Noxious plants are a concern on the RGNF because they aggressively compete with native plants for sunlight, water, nutrients, and space. They have the potential to displace native plants and animals. They can reduce forage for livestock and wildlife, degrade wildlife habitat, and negatively affect recreation opportunities. In extreme situations with certain weeds, there is a corresponding impact to soil health since the noxious plants provide little effective cover and the soil is exposed to rainfall impacts, overland flow, and higher temperatures than would occur in the natural plant community. Many noxious plants are also injurious or poisonous to both wildlife and to humans and domestic animals. The long-term effects of any infestations that occur or become established within the analysis area would result in the reduction of species diversity within the native plant community. Therefore, it is necessary that on-going noxious plant inventories continue and treatment of known, existing infested areas both inside and outside of the analysis area continue. Implementation of project design criteria found in chapter 2 (table 2.5-1) will minimize the introduction of new noxious plant seed sources inside the RGNF.

Alternative 1 (No Permitted Livestock Grazing)

Permitted livestock exclusion would eliminate one potential vector for seed transport and one disturbance factor that has the potential to create a niche for possible noxious plant infestations. However, without permitted livestock, areas that are regularly visited for livestock management would no longer be visited, potentially allowing infestations to go undetected for longer periods.

Effects Common to All Action Alternatives

Permitted livestock have the potential to be a vector for the spread of noxious plants. However, livestock seem to have a minimal effect on the spread of noxious plants. It is more likely, based on existing noxious plant occurrences, that potential spread would come from other human activities in or adjacent to the analysis area. Furthermore, proper livestock grazing is designed and intended to minimize niches for noxious plants.

Cumulative Effects

Any activity that results in sites with a lack of native vegetation, increased bare soil, or an opening in a shade producing canopy is likely to create niches where there is a potential for noxious plant invasion. Transport vectors are available for weed propagules to find their way to the analysis area. See “Cumulative Effects” (section 3.18) for a comprehensive discussion of cumulative effects.

3.17 Fire and Fuels Resources

3.17.1 Scope of the Analysis

This section discusses fire and fuels management in the analysis area (see chapter 1, map 1).

3.17.2 Past Actions That Have Affected the Existing Condition

Wildfire effects in the analysis area have been nominal over the last several decades. Since 1971, approximately 50 wildfires have occurred in the area, burning approximately 400 acres. Most fires were less than a 0.1 acre, and low intensity/severity, although a 300-acre fire occurred in 1974 in the Royal Gulch area.

Over the past decade, several prescribed fires have been implemented in the area, totaling approximately 8,700 acres. The majority of these burns targeted ponderosa pine stands in the lower elevations to reduce hazardous fuels and improve wildlife habitat. A minimal amount of park and grass lands have been affected by these burns, although the Fullerton Park prescribed burn in 2003 targeted 470 acres of rangeland to reduce tree encroachment and rejuvenate grasses.

A map showing wildfire and prescribed fires in the analysis area from 1971 to present is included in the project record.

3.17.3 Existing Condition

Wildfires in the area average 1.3 fires per year, and that trend should continue as long as climate and fuels trends remain the same. Current fuel loading in the rangeland (grass fuels) is low to moderate and has had little bearing on fire spread in the analysis area. In mixed conifer stands, fuel loading is moderate to high and will continue to accumulate unless treated or if wildfire occurs. Fuel loading in the lower elevation ponderosa pine stands has been reduced by returning fire to the ecosystem through prescribed fire.

There are no prescribed fires or mechanical fuels treatments currently planned in the analysis area. However, prescribed fire and/or mechanical treatments will be used in the future within the area as a means to reduce hazardous fuels, improve wildlife habitat, improve timber stand health, and improve rangeland health.

3.17.4 *Direct, Indirect, and Cumulative Effects*

None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects. The actions proposed in the alternatives of this EA would be in compliance with the desired conditions relative to prescribed fire and wildland fire use for the applicable MAs in this analysis area. The Forest has a prescribed fire plan in place that covers the RGNF, including the analysis area (USDA Forest Service 1997a).

Alternative 1 (No Permitted Livestock Grazing)

The effect of no livestock grazing on fire and fuels would be the potential for increased amounts of fine fuels in the form of grasses, forbs, and accumulated litter. This effect would compound over time as fuel accumulations in ungrazed plants continued to build. These dead and dry fine fuels would have higher potential for ignition, higher rates of spread, and may be hazardous in the case of an uncontrolled wildfire. In the case of prescribed fire, these fuels could be important in helping to carry a prescribed burn. Much of the upland areas are only grazed lightly or not at all (in non-suitable rangelands, or steeper or less well-watered areas of secondary range); and therefore, the net effect of excluding livestock on fuels is likely to be negligible in most instances.

Alternative 2 (Current Livestock Grazing Management)

Fine fuels are critical in meeting prescribed burn objectives. A higher load of these fuels may be needed to carry fire, and lower loads may be used for holding and containment purposes. Livestock grazing practices often need to be adjusted to ensure that proper fuel loading is present to meet prescribed burn objectives. Post-burn rest periods are also needed to ensure regeneration and plant health. Current management limits flexibility with cattle rotation and rest periods.

Alternative 3 (Adaptive Livestock Grazing Management)

The ability to readily adjust grazing practices would help expand prescribed burn implementation opportunities related to fuels and weather conditions. Adaptive management offers the most flexibility for grazing practices to be adjusted in order to meet fuels treatment objectives.

Cumulative Effects

See “Cumulative Effects” (section 3.18) for a comprehensive discussion of cumulative effects.

3.18 Social and Economic

3.18.1 *Scope of the Analysis*

This section addresses environmental justice and the potential social and economic effects on the livestock grazing permittees of the analysis area, which is entirely in Saguache County. In analyzing social effects, we have attempted to emphasize groups of individuals (those holding Forest Service grazing permits in the area and those in this area engaged in some related way in ranching-based agriculture), communities and community institutions, and the group of communities in this area. Analysis of net benefits was done using the Quick-Silver (v. 6) software program, adapted for the Forest Service, was used to conduct the financial and economic efficiency analysis (USDA Forest Service NRIS 2000). Quicksilver analyses are included in the project record.

3.18.2 Past Actions That Have Affected the Existing Condition

Prior to 1960, considerably more livestock grazed the analysis area (see “Rangeland Resources,” section 3.4, for more information). Mining was the primary way of life in Saguache County, Colorado, from the late 1800s to early 1900s. However, by 1920, Saguache County had converted to farming and ranching to support the local economy. Agriculture, particularly ranching, remains an important industry and livelihood for many living in Saguache County. Appendix F briefly summarizes the demographic characteristics of the people who live in the towns and counties of the SLV (San Luis Valley); recent patterns of demographic change; occupation, industry and employment; heritage patterns; and the general size and level of activity for association, organizations, and local government.

3.18.3 Existing Condition

There are five term grazing permits with multiple allotments authorized for the allotments in the analysis area. Four of the five existing permit holders reside in Saguache County and all of the permittees hold grazing permits on BLM allotments located on the Saguache Field Office. Table 3.16-1 shows the permittees, residences, allotments which they are permitted, and if they are BLM permit holders.

Table 3.16-1. Term grazing permit holder information by permittee

Permittee	Allotment in Analysis Area	BLM Permit Holder
Davey Family Partnership Ltd.	Tracy Canyon	Yes
Robert and Carol Dugan	Cottonwood, Sawlog	Yes
Gary and Alice Hill	California Gulch, Carnero, Mill Creek, San Juan Maez	Yes
Hill Family Limited Partnership, CJH	Houselog	Yes
L+ Ranch	Cave, Pasture	Yes

3.18.4 Direct, Indirect, and Cumulative Effects

The social and economic effects considered for this EA are related to the potential consequences of changes in grazing permits which would alter the way people in the SLV live, work, relate to one another, organize to meet their needs, and generally function as members of society. Particular attention was given to groups of socially vulnerable people, such as the poor, the elderly, adolescents, the unemployed and marginally-employed, and members of groups that are ethnically or culturally distinctive. We also paid close attention to occupational, cultural, and value-based groups for whom the community, area, or use of the National Forest System lands in the SLV are particularly important.

Agriculture ranks as the number one source of base employment in Saguache County and agriculture income accounts for 38.1 percent. The 2002 Census of Agriculture identified that 23.5 percent of Saguache County total land area was farm and ranch land, where the average size ranch is over 1,800 acres. The market value of agricultural products sold in Saguache County was over 27 percent of the total sold in the SLV, of which livestock accounted for almost half. The USDA National Agricultural Statistics Service estimated inventories of beef cows in Saguache County for 2009 totaled 18,500 head. Assuming a full 12 months for each head,

225,083 head months (HMs) were estimated for Saguache County in 2009. Grazing on the ten allotments analyzed in this document represents about 7.2 percent of county-wide totals for beef cows.

Perspectives on the Importance of Grazing NFS Lands. Although most ranches in the West are only partially dependent on Federal grazing land for forage, this forage source is often a critical part of their livestock operation. Taylor et al. (2005) found that while the reliance of ranchers on forage from Federal land grazing can appear relatively unimportant when calculated on an acreage or AUM basis, they become quite important when calculated on a seasonal dependency basis. The rigidity of seasonal forage availability means that the optimal use of other forages and resources are impacted when Federal AUMs are not available. Many researchers over the last 25 years have found that potential reductions in income and net ranch returns are greater than just the direct economic loss from reductions in Federal grazing. Because ranching operations have economic linkages with other sectors of the area's economy, changes in Federal grazing can also have implications for the overall local economy.

Results from ranch-level analyses suggest that there are at least three possible approaches to evaluating the economic importance of Federal grazing to local communities: (1) evaluating Federal AUMs only, (2) evaluating Federal AUMs and the effects on total ranch production, and (3) evaluating Federal AUMs and their effect on the economic viability of the ranch operation. Taylor et al. (2005) found the effects of Federal grazing to the local economy in Park County, Wyoming, were roughly twice as large when considering total ranch production compared to Federal AUMs only. From the perspective of ranch viability, effects to the local economy were roughly twice as large compared to total ranch production, or four times larger than Federal AUMs only. Which of these approaches is the most relevant in a particular situation depends on a number of factors including the individual ranch's level of dependency on Federal grazing, the magnitude of the proposed change in grazing, the financial solvency of the ranch, the availability of alternative sources of forage, and the desire of the rancher to remain in ranching.

The ranch operations that have term grazing permits in the analysis area have built their operation with reliance upon Forest Service grazing permits (Villa 2008). Private grazing land is generally not available for replacement of Federal permits, due in part to high land values throughout the SLV. Consequently, permittee operations are quite vulnerable to changes in Federal grazing. Although a definitive assessment is not possible for this analysis, it is recognized that adjustments to Federal grazing, whether in terms of AUM reductions or cost increases to permittees, can have important consequences to individual ranch operations and ranch viability, as well as implications to families, social structure, lifestyle, local economies, and land use.

Environmental Justice. Executive Order (EO) 12898 directs Federal agencies to focus attention on the human health and environmental conditions in minority and low-income communities. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations.

Table D-1 in appendix F was developed from census bureau data from 2000. It highlights the minority group composition of the analysis area counties compared to Colorado State statistics. A minority population exists if 50 percent or more of the total population is considered to be of any minority group (Council on Environmental Quality 1997). The table shows that Alamosa, Rio Grande, and Saguache Counties have minority populations larger than the State average, and Conejos and Costilla counties in the San Luis Valley have the largest minority populations. Table D-1 also displays the percent of individuals living below the poverty level by county and by

State, and displays the percentage of households that heat with wood as their primary heat source, which is another low income indicator. In some areas of the State, heating with wood is an important factor to consider when looking at potential impacts of Forest Service actions because many low income families gather and use wood as their primary source of affordable heat.

The State had about 9 percent of the total population living below the poverty level in 2000. Alamosa, Conejos, Costilla, and Saguache counties all had individual poverty rates of 20 percent or higher in 2000. In addition, Conejos, Costilla, and Saguache Counties also had higher levels of households heating with wood. These counties are within the southern San Luis Valley near the analysis area, and have historically seen lower income levels and higher minority populations than the rest of Colorado.

Within the southern San Luis Valley, many rural Hispanic families continue to live in traditional ways on lands farmed by their ancestors. Many families operate outside the cash economy, relying on access to public lands for resources they need. This includes subsistence hunting and gathering, gathering wood for heating and cooking, grazing small herds of domestic animals under permit, and gathering traditional cultural products (Romero et al. 2001).

3.18.4.1 Social and Environmental Justice Effects

Effects Common to all Alternatives

No social group would be made vulnerable by Forest Service actions related to the issuance or non-issuance of grazing permits. Participation by permittees and others in the ranching business in a variety of community, charitable, social, church, and school groups would be expected to remain high. Social associations among ranchers would be expected to remain in place under all the alternatives of this EA. Some organizations and informal gatherings may experience minor changes in participation under these alternatives, but this may be more attributable to ongoing changes in cultural and population makeup in the SLV rather than a consequence from any alternative. The actions proposed in the alternatives would have no effect on public health and safety. None of the alternatives would be expected to result in significant direct, indirect, or cumulative effects.

None of the alternatives would change the demographic conditions and trends described in the affected environment. The increasing and changing population growth, along with changes in age and racial diversity, would have some impacts on NFS lands in terms of the types of resources and opportunities people demand from their public lands.

Alternative 1 (No Permitted Livestock Grazing)

This alternative would result in the loss of 1,329 cattle from using the analysis area allotments. The ranching operations affected would likely require major changes in lifestyle, decreased spending, and greater diversification of their overall ranch operations. Some permittees may have diversified their overall operations, and may be better able to adapt to the loss of National Forest grazing privileges. There may be long-term impacts on individual families within the communities who depend on the existing livestock operations to provide a livelihood. Under this alternative, any operation forced to sell and therefore go out of business, would be perceived by local residents as directly caused by the elimination of livestock grazing on Federal lands. Those publics preferring to eliminate livestock grazing on Federal lands would be positively affected by the implementation of this alternative.

The San Luis Valley appears to be an area where access to NFS lands is important for families to maintain their rural lifestyle. Alternative 1 will have the greatest potential for loss of grazing opportunity which could have an impact on the low income or minority populations in the valley. The impact would not be disproportionately negative to those groups, but would be the same to all permittees.

Alternative 2 (Current Livestock Grazing Management)

This alternative would result in maintaining 1,329 cattle on the analysis area allotments. There would be no broad-scale changes expected in the social demographics within the SLV as a result of this alternative. Those publics preferring to eliminate livestock grazing on Federal lands would continue to have concerns associated with the use of Federal lands for livestock grazing by the implementation of this alternative. There are no effects predicted, since there would be no impact on the affected permittees (and thus no impact on local communities).

Alternative 2 would have the least change for any group in terms of grazing.

Alternative 3 (Adaptive Livestock Grazing Management)

This alternative would allow livestock numbers to vary from season to season, but they would not exceed the estimated AUM carrying capacity for the analysis area. Changes in management would occur to be more responsive to changing conditions (both environmental and ecological) as well as changing use patterns by recreation users. Individual permit holders may be effective in monitoring and using forage from Forest Service lands with new management, while others may be unable to adapt to the new management requirements and remain viable. Groups who view the desired conditions as improved resource and ecological health would be positively affected by implementation of adaptive management. This alternative is not expected to result in any considerable changes within the SLV agricultural community.

Alternative 3 allows grazing to continue, but requires adaptive management activities. Because it is difficult to determine how each individual operator will adapt to these new ways of managing their grazing operations, it is difficult to know how successful an individual will be. But all operators will be required to follow the same adaptive management activities, so there will be no disproportionately negative impacts to any low income or minority group.

3.18.4.2 Financial and Economic Efficiency

The financial and economic efficiency analyses were conducted over the initial life of this decision (10 years). All parties with identifiable costs and benefits (revenues) were included. The scope of the analyses is the analysis area, consisting of ten allotments.

The main criterion in assessing the financial and economic efficiency is present net value (PNV). PNV is the current value of future benefits and costs over the life of the project discounted at the agency-established rate of 4 percent (USDA Forest Service NRIS 2000). Table 3.16-2 displays the PNV for each alternative. This economic efficiency analysis does not consider ecosystem services or non-market goods that are not required at the project level by the National Forest Management Act (NFMA). Ecosystem services and non-market goods are addressed in the Forest Plan (see pages 3-445–3-469 of the FEIS). Alternatives that meet the requirements and intent of the Forest Plan achieve net public benefits as stated in NFMA.

Cost Efficiency

Cost efficiency is an analysis approach that uses the monetary expression of some benefits and costs, while recognizing that other benefits and costs are best expressed in other terms. Costs expressed in dollar terms here include labor and materials. Benefits expressed in dollar terms here include grazing fees and the market value of forage. Other costs and benefits, such as watershed and riparian health, wildlife diversity, or scenic quality, have not been assigned dollar values; therefore, they are expressed using other quantitative and qualitative terms in the EA and project record. An economic analysis was conducted for each alternative. Table 3.16-2 displays the estimated PNV for each alternative by partner.

Table 3.16-2. Efficiency analysis (present net value in 2009 dollars)

Alternative	Economic (Total PNV)	Financial	
		Forest Service	Permittee
Alternative 1 (No Permitted Livestock Grazing)	-\$46,900	-\$144,300	\$98,400 ²
Alternative 2 (Current Livestock Grazing Management)	\$274,600	-\$159,800	\$434,400
Alternative 3 (Adaptive Livestock Grazing Management)	-\$138,500 ¹	-\$348,900	\$210,400

¹ Analyzed assumes the maximum cost of implementing all proposed adaptive management actions. Actual costs would vary depending upon the effectiveness of initial specific design criteria. To fully disclose the potential economic effects of this alternative, however, the full suite of adaptive management actions and options are assumed to occur. It is unlikely that the full suite of proposed adaptive management options would be needed.

² Does not represent cost to the permittee of replacing NFS grazing lands.

Alternative 1 (No Permitted Livestock Grazing)

Alternative 1 would cease livestock grazing on the analysis area; therefore, permittees would receive revenue from grazing prior to closure during the two-year time period provisions (FSH 2209.13). Thereafter, they would not incur any costs or derive any future income from grazing on NFS lands. For the Forest Service, PNV is negative due to no revenue being generated after allotment closures, but continued administrative costs for the Forest Service to manage the lands within the analysis area. These costs include noxious plant monitoring, fence inspections, range condition and unauthorized livestock use. Additionally, there are costs associated with maintaining, or removing existing infrastructure.

There would likely be long-term impacts on individual ranch operations. The loss of grazing privileges would require a reduction in livestock numbers and adjustments to ranch production. Private grazing lands, normally sought under these conditions, are generally unavailable in Saguache County or the entire SLV. Where such lands are available, they tend to be expensive. Some operators may adapt to the loss of the Federal rangeland currently available to them, but a more likely result would be the loss of ranches and sale of ranch properties.

Alternative 2 (Current Livestock Grazing Management)

Alternative 2 reflects current operational costs and income. The financial analysis shows that Forest Service income from grazing permit fees does not fully offset the cost of annual maintenance and permit administration (such as inspections). Grazing fees are set based on a formula established by Congress and Executive order. The formula is not subject to change by the Forest Service. Revenues are generated with no appreciable increased cost to the Forest Service to administer and monitor the allotments.

Permittee operations show a net profit for grazing on Federal lands. Permittee costs include their annual operation and maintenance costs (transport of livestock, management costs, improvement maintenance, and meetings with the Forest Service). The economic analysis includes the benefits and costs of both parties. Cumulatively, permittees operating in alternative 2 have a positive PNV for monetary-expressed benefits and costs. When both agency and permittee benefits and costs are considered, the PNV is negative.

Alternative 3 (Adaptive Livestock Grazing Management)

Alternative 3 has been analyzed assuming maximum implementation and responses to management actions. This alternative assumes, for both the permittee and Forest Service, the cost of implementing all proposed adaptive management actions. In practice, these costs would vary depending upon the effectiveness of initial specific design criteria. To fully disclose the potential economic effects of this alternative, however, the full suite of adaptive management actions and options are assumed to occur. It is unlikely that the full suite of proposed adaptive management actions would be needed. Should monitoring during the life of this decision reveal that not all actions are required, options would be implemented only to the extent that they are actually needed.

The Forest Service revenue flow under alternative 3 decreases as compared to alternative 2. Additional costs incurred by the Forest Service under this alternative include its share of costs to build new fences, construct new spring developments, reconstruct nonfunctional spring developments, and an increase in administration and monitoring of allotments. The purpose for these actions and improvements is to restore rangeland conditions in the most cost-efficient manner over a reasonable period of time, while maintaining livestock grazing and generally contributing to ranch viability in the area. As stated in the purpose and need (sections 1.4 and 1.5), grazing on National Forest System lands is an intended use of suitable rangelands, while maintaining and/or improving conditions in order to meet Forest Plan objectives and desired conditions.

Under alternative 3, permittee operations show a reduced net profit for grazing on Federal lands. Permittee costs include building new fences, include the share of costs to build new fences, construct new spring developments, reconstruct nonfunctional spring developments, and an increase in operation costs due to monitoring and more active management. Different permittees would realize quite different financial conditions under this alternative. In order to select alternative 3, the decision maker must consider the value of net unpriced benefits over the life of the project. These benefits include: riparian protection, improved water quality, enhanced recreational experiences, and increased forage for wildlife. Such unpriced benefits are not included in the PNV analysis, but are important to consider.

3.19 Other Disclosures

All alternatives comply with the Clean Air Act. The Forest Plan FEIS (USDA Forest Service 1996b) explains on pages 3-151 through 3-154 that air quality in the RGNF is good for all air pollutants; that the entire Forest meets National Ambient Air Quality Standards; and that nothing proposed in the Forest Plan would substantially change existing air quality. The selection of alternative 2 or 3 (which would continue livestock grazing within the analysis area) would not noticeably alter air quality and, therefore, would be expected to be in full compliance with the Clean Air Act.

There are no adverse effects expected to public health or safety under any of the alternatives. The actions proposed in the alternatives of this EA would have no effect on park lands or prime farmlands, rangeland, and forest land as defined in FSH 1909.15 section 65.2. These kinds of land allocations or land capability either do not exist in the analysis area or would be unaffected by the proposed activities in the alternatives.

The actions proposed in the alternatives of this EA would have no effect on ecologically critical areas. Ecologically critical areas have not been formally recognized and designated within the analysis area. However, there are no activities proposed that would alter the natural appearance or function of landscapes in this area.

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC; available online at: <http://www.ipcc.ch/>) shows that there have been clear patterns of temperature increase and long-term trends in precipitation change around the world since 1900. The Forest Service acknowledges that global climate change is an important emerging concern worldwide. However, there is no established scientific methodology to measure the effects of small-scale projects such as this project on global climate. This analysis briefly addresses global climate change in two ways: (1) effects of climate change on a proposed project, and (2) effects of a proposed project on climate change. Each of these is briefly discussed below relative to this project.

Effects of Climate Change on a Proposed Project. NEPA does not specifically require analysis of how environmental factors, such as global climate change, might impact a proposed action. Any differences in effects of climate change on the project between alternatives (including no action) would be negligible.

Effects of Proposed Project on Climate Change. The proposed activities are extremely small in scope and magnitude relative to a planetary scale. Although it may be possible to quantify a project's direct effects on carbon sequestration and greenhouse gas (GHG) emissions, there is no certainty about the actual intensity of individual project indirect effects on global climate change. Cumulative effects would be a consideration of GHG emissions affecting climate from multiple projects over time. But, as GHG emissions are integrated across the global atmosphere, it is not possible to determine the cumulative impact on global climate from emissions associated with any number of particular projects. Nor is it expected that such disclosure would provide a practical or meaningful effects analysis for project decisions. Any differences between alternatives (including no action) would be negligible at a global scale.

There are two currently active timber sales within the analysis area:

The MOAB Salvage Timber Sale: This timber sale is located in the Carnero Allotment on the RGNF. The sale is located in all or portions of sections T43N, R5E, section 6 and 7, NMPM, Saguache County, Colorado. The project area is accessed from by Forest Road 652.1A. The sale is about approximately 57 acres of live and dead Englemann spruce and other conifer species as well as live and dead aspen. The sale is the result of a wind event in early June 2008. An estimated 547 CCF (hundred cubic feet) of sawtimber will be harvest.

Brown's Creek B Salvage Timber Sale: This timber sale is located in the Houselog Allotment on the RGNF. The sale is located in all or portions of sections 12, 13, 14, 24, T44N, R5E and section 18 T44N, R6E NMPM, Saguache County, Colorado. The project area is accessed by Forest Road FDR 619. The sale area is approximately 600 acres consisting of three cutting units

totaling 555 acres. The timber sale will remove approximately 1,114 CCF of live and dead ponderosa pine and Douglas-fir sawtimber and products other than logs.

In addition, there is one timber sale to be offered for sale in fiscal year 2011 and one area proposed for analysis within the analysis area.

Brown's Creek A Salvage Timber Sale: This timber sale is located in the Houselog and Mill Creek allotments. The sale is located in all or portions of sections 7, 17, 18, 19, and 20, T44N, R6E NMPM, Saguache County, Colorado. The project area is accessed by Forest Road 706. The sale area is approximately 800 acres consisting of four cutting units totaling 737 acres. The sale will remove approximately 981 CCF of live and dead Douglas-fir, ponderosa pine, and other conifer species, sawtimber, and products other than logs. This sale will be offered in FY 2011.

The Proposed Houselog Project: The proposed Houselog Project area is contained within a single timber analysis area. The relative location of the timber analysis area is bounded to the east by CR41G, to the west by Trapper Creek, and is located to the south of Saguache Creek and north of Hat Mountain. The project area includes all or part T44N, R4E; T44N, R5E; T45N, R5E; and T45N, R6E; based on the NMPM.

Direct and indirect effects of timber harvest are removal of tree boles and tree canopy reduction with a resultant change in understory vegetation response. There is generally a temporary increase in ground disturbance. Timber harvest can create a temporary change in species composition (often increasing forage for some wildlife and livestock). Proposed actions and maps for timbers sales are included in the project file.

In addition to these large sales, personal use firewood gathering is active in most of the areas infested with mountain pine beetle and Douglas-fir bark beetle within the analysis area. Small commercial firewood opportunities also exist within most forested areas of the analysis area. Where feasible and accessible, these areas will be analyzed for treatment through the small sale program. Many other vegetation treatment opportunities exist where timber stands are encroaching into open parks and meadows. These potential treatments will be analyzed using the Saguache District Small Sales EA.

The action alternatives are consistent with the Forest Plan. Alternative 1 does not fully address the desired conditions for Rural Development (Forest Plan, page I-6).

Applicable laws and regulations were considered in this EA. The proposed actions in the alternatives are consistent with Federal, State, and local laws and requirements for the protection of the environment. The proposed actions are consistent with the Regional Forester's direction relative to water, the National Forest Management Act (NFMA), and wildlife (USDA Forest Service 1996d). Finally, general issues regarding biological diversity (biodiversity) were judged to be outside the scope of this analysis. They are more appropriately analyzed at the Forest scale (USDA Forest Service 1996d). This project-level EA tiers to the biodiversity assessment done for the revised Forest Plan FEIS (USDA Forest Service 1996b).

There are no adverse effects expected on inventoried roadless areas under any of the alternatives (i.e., there is no road construction or reconstruction proposed under any alternative that would alter the roadless characteristics). Inventoried roadless (IRA) areas occur within the analysis area and account for approximately 14,746 acres in six allotments. Table 3.17-1 describes the IRA by allotment.

Table 3.17-1. Acres of inventoried roadless areas by allotment

Allotment	Inventoried Roadless Area e	Acres
California Gulch	Deep Creek/Boot Mountain Four-Mile Creek	241 3,682
Carnero	Sawlog	1,846
Cave	Deep Creek/Boot Mountain	320
Cottonwood	Sawlog	1,181
San Juan Maez	Sawlog	569
Sawlog	Sawlog	6,907

The effects on the human environment are not highly uncertain; are very unlikely to involve unique or unknown risks; and are not likely to be highly controversial because there is no scientific controversy on the impacts of the proposed actions in the alternatives. The effects analysis in this chapter show the effects are not uncertain, and do not involve unique or unknown risk. The proposed actions are not likely to establish a precedent for future actions with significant effects.

3.20 Cumulative Effects

The Council for Environmental Quality (CEQ) defines cumulative impacts as, “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable further actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” In other words, cumulative effects are simply the sum total of past, present, and reasonably foreseeable environmental, social, and economic effects of land management activities which, when taken in context of this specific project, affect the conditions and trends of resources and values within the analysis area and adjacent area of influence. For the purposes of this analysis, we considered impacts spatially in and around our analysis area, including affected local communities. Temporally, we considered impacts starting in the late 1870s and projecting proposed actions into the future roughly one decade. Cumulative effects were determined based on a list of past, present, and reasonably foreseeable actions in the analysis area developed by the ID Team and recorded in the project record (i.e., actions included livestock grazing, recreation, trails, wildlife populations, private land/open space, specially designated areas, and socio-economics).

Past, present, and reasonably foreseeable future activities in the analysis area include: timber treatments; prescribed fire and wildfire; mining activities; permitted and public recreational activities; livestock grazing regimes; wildlife populations and movements; noxious plant control; road and trail development; human population and social dynamics; water diversions, rights and developments; and watershed improvement projects.

Cumulative Effects Common to all Alternatives

Rangeland Vegetation, Forested Vegetation, Soils and Botanical Resources. Suppression of naturally occurring wildfire, intensive and improperly managed livestock grazing practices,

significant increases and fluctuations in certain wildlife species populations (specifically elk, mule deer, and beaver), mining activity, along with timber harvest and silvicultural activities (including associated railroad and road construction) over the past 50 to 120 years have changed the pattern of certain vegetation communities, and in some cases, have altered natural functions. Communities most affected include those with a strong natural fire disturbance relationship and/or a strong inter-relationship with available water (see “Riparian and Aquatic Resources” section below).

Improved livestock management practices over the past several decades, along with road closures and rehabilitation, and an increased prescription timber harvest and fuels management program within the analysis area, has resulted in the majority of the analysis area moving toward, or achieving desired conditions. Those areas currently not meeting desired conditions are expected to move toward or achieve desired condition within 10 years. Restoring the natural processes such as soil building, nutrient cycling, and more historical/ecological representation of indicator and desirable plant species within the communities is expected to occur more rapidly over time; however, rebuilding many of these processes is a long-term prospect.

In areas where there has been extensive equipment use (such as tractors in logging), or concentrations of livestock or recreational activities, there has been some degree of compaction and/or displacement of soils and plant community type conversions. For the most part, this is minor and localized. Improvements in livestock grazing practices, as well as reduced and/or improved logging practices is resulting in a slow, but continuing improvement in these past impacts.

Recreation. Recreational activities have occurred on the analysis area since the late 1870s to early 1900s. In most instances, these activities were focused on camping, picnicking, hunting and fishing. Impacts were normally minor and localized, often taking the form of harvest of fish or wildlife, cutting of wood for campfires or camp facilities, picketing and grazing of pack stock, and so forth. The automobile increased access to the analysis area as additional roads were pioneered or constructed. Developed campgrounds were constructed, trailheads were built and numerous dispersed campsites were pioneered. Impacts began to become more acute, particularly in riparian areas where there was water, shade, fish, and other conditions desired by the recreating public. In more recent times, off-road vehicle (ORV) use has increased greatly with four-wheel-drive vehicles pioneering numerous two-track roads. All-terrain vehicles (ATV) and motorcycles added to the impacts with numerous cross-country trails. The analysis area has become increasingly popular for hunting in the last two decades as other open space areas have been pressured by urban development and increased recreational use. Increased recreational activities have resulted in increased erosion, in some areas dramatically, along with detrimental impacts to plant communities. Impacts to livestock grazing permittees also increased as livestock increasingly encountered other users, gates and fences were tampered with, and grazing rotations disrupted. In response, recreational and law enforcement time and costs have increased in an attempt to manage recreational uses.

Roads and Trails. Roads are often a major influence in watershed health. Roads (and to a lesser extent trails) alter overland water movement by intercepting flow, concentrating it and moving it along roadside ditches to points where the water is released to the landscape or riparian areas or streams. Roads also similarly intercept sub-surface flow, again altering soil water regimes down slope. Roads, by concentrating water, also serve to move sediment, both from road surfaces, and from upland sources. The concentrated flow is unable to filter out as it would on vegetated surfaces and as a result, concentrates and moves down slope to enter riparian

areas or streams. Roads may also serve as concentration points and transportation vectors for pollutants. Noxious and invasive plants often find the unvegetated and frequently disturbed surfaces ideal for establishment and frequently many invasive or noxious plants are able to move rapidly along road corridors, transported by vehicles, people, or animals (wildlife or livestock). In general, the greater the number of miles of road in a watershed, and more specifically, the greater the extent of road (or to a much lesser degree trail) miles connected to riparian and stream courses, the greater the potential for negative effects. Travel management analysis is currently on-going on the Saguache Ranger District, and will include the analysis area. The result of travel management will be a new visitor use map that will designate roads on the RGNF. It is expected that the overall mileage of roads (including designated and user-created) in the analysis area will decrease. Increased compliance by the Forest users to designated roads would result in increased overall watershed health.

Riparian and Aquatic Resources. Past land uses in and near the analysis area have caused long-term modifications of the forest and grassland landscape, original stream channel health and morphology, and riparian vegetation; thus altering the characteristics of stream and riparian habitat in the analysis area. These modifications within the area of influence are a result of dams, water diversions, bridges, roads, trails, logging, grazing by both livestock and large wild ungulates, mining, fire suppression, recreation, beaver trapping, and agricultural uses.

Existing impacts from roads, trails, and other developments, especially those adjacent to or within riparian areas include loss of riparian vegetation, accelerated erosion, and increased sediment transport. It may also include alteration of overland flow regimes, and interception and relocation of subsurface flows (see additional discussion under “Roads and Trails” above).

TES, MIS, and Wildlife Resources: Historical composition, distribution, and abundance of wildlife species and habitat have likely changed across the entire analysis area since Euro-American settlement (approximately mid-1870s) in this area. Several factors have contributed to these changes including timber harvest, grazing of domestic animals, hunting/trapping pressure, extirpation of large predators, fluctuations in large wild ungulate populations, human facility development, wildfire suppression and prevention, and anthropogenic influences. All of these activities have had an effect on the native plant communities of the analysis area. As a result, wildlife and TES resources have also been impacted, and in some cases, continue to show effects today.

Within the analysis area, the greatest threats to wildlife are development of private lands and associated infrastructure, increasing recreational use of public lands, livestock grazing, and events that affect large geographic areas or populations, such as catastrophic fire, timber beetle infestations, and animal disease (chronic wasting disease, West Nile virus). All Federal actions account for the effects of these activities on wildlife and typically moderate adverse effects to acceptable levels that, when implemented, will allow the analysis area to meet or satisfactorily move toward desired conditions.

Changes in plant communities have resulted in alteration of habitats for riparian-dependent animal species, especially in those areas where multiple impacts including timber harvest, road construction, past improperly managed livestock grazing, and trapping of beaver have been the most intense. For the most part, these areas are the lower elevation willow communities on relatively flat topography. In many instances, these areas have recovered substantially from the heavy historic impacts.

Upland plant communities, and therefore the wildlife species and TES plants and animals that use those communities, have also been affected. In some areas, heavy historic livestock impacts (and in some areas heavy and improperly timed large wild ungulate use), less than desirable timber management practices followed by dense regeneration, combined with a lack or naturally occurring fire have caused a loss of understory habitats and forage resources. In some places, recovery is under way and likely to accelerate as a combination of improved timber management practices, thinning, use of prescribed fire, and much reduced and better managed livestock grazing allow for a return to more historic stand conditions.

Heritage Resources. Cumulative effects to heritage resources relate primarily to the kind, amount, and locations of range improvements (such as water tanks, wells, and fences), number of livestock, logging systems and intensities of harvest, fuels treatments, recreational activities, and other ground-disturbing activities within the analysis area. The development of range structural improvements and/or level of activity otherwise within the analysis area may proportionately increase the number of fossil and heritage resource sites that are found. This may necessitate mitigation and site-protection measures. Thus, these projects are at times at least somewhat beneficial because they add to the cumulative knowledge record of identified heritage sites in the RGNF. In addition, these projects provide opportunities to scientifically evaluate and study heritage sites.

Conversely, numerous projects within or near heritage sites could ultimately decrease the integrity of the heritage resource base. For example, structural improvements (and access to them) could increase public knowledge of locations of heritage resources and increase casual vandalism (such as arrowhead collecting) and looting. Repeated improvements and maintenance of a range development, could, over time, slowly add to the attrition and deterioration of a known but avoided heritage resource site.

The number of livestock on a given allotment, and within the analysis area as a whole, could also add to the cumulative deterioration of the heritage resource base. While there is no common agreement between resource specialists as to how extensive the effects of livestock grazing are, there is no disagreement that livestock have the potential to trample existing heritage resources. While this does not occur within the span of a single season or year; the effects are cumulative and result from continued, long-term grazing operations on the natural landscape. As rangeland and livestock management continue to improve and to move toward meeting the desired conditions, most heritage resource sites will experience greater protection in terms of increased vegetative cover providing greater hiding cover for artifacts from collectors.

Invasive/Noxious Plants. Cumulative actions that have an impact on the risk of noxious plant invasion or expansion include prescribed burning and forest vegetative treatments (roads and recreation are key factors from a risk standpoint) as well as grazing by livestock and large wild ungulates. Invasive plants are likely to invade areas that are treated with prescribed burning when the burn results in bare ground, open spaces between live plants, or opening of the overstory canopy. Timber management treatments, road construction or maintenance, and to a lesser extent current livestock grazing practices also may cause enough disturbances to increase noxious plant risk. Transport vectors are available for noxious plant propagules to find their way to the analysis area. These include the road and trail network; equipment brought in for logging, maintaining roads, or firefighting; livestock coming off of private lands; and large numbers of recreationists with vehicles and horses and camping/hiking equipment. To date, infestations are small and localized. However, many species of noxious plants are found in adjacent counties and it is simply a matter of time before they are found on the analysis area. Treatment activities are

currently adequate to control or contain existing infestations but could be overwhelmed by any sudden or large expansion.

Noxious plants and other invasive species (plant and animal) have the potential to displace native plants and animals. In extreme situations with certain noxious plants, there is a corresponding impact to soil health as the plants provide little effective cover and the soil is exposed to rainfall impacts, overland flow, higher temperatures, than would occur in the natural plant community. Many noxious plants are also injurious or poisonous to wildlife, humans, and domestic animals.

Socio-Economics/Private Lands/Open Space. Over time the costs of doing business on NFS lands has increased for livestock operators as other uses expanded. For example; increased recreation activity results in increased livestock operating costs related to animal loss, additional maintenance of improvements, and additional work to ensure compliance with permit requirements as a result of gates and fences being tampered with and grazing rotations being disrupted. The most significant effects have been related to a combination of changing consumer preferences for meat and wool following World Wars I and II, added to increased costs for employees and difficulty in finding qualified help (Holechek 2009). These factors have combined to make operations in the analysis area less economically resilient.

Much of the private land near the analysis area is used for producing grass hay or alfalfa, and grazing livestock. The effects of these activities add to existing cumulative effects to the area of influence. These private lands are increasingly desirable for conversion from agricultural uses and open space to 40-acre lots for second homes (Talbert 2007), which has greatly increased land values and taxes and has increased pressure on livestock operators to sell-out and allow development. An effort has begun to focus on protecting private rangelands from development, but this effort is minimal to date in the analysis area. As private rangelands are developed for home sites, habitat for many wildlife species is seriously affected. Winter ranges (including spring and fall ranges) are critical to many wildlife species survival. This makes the NFS lands in the analysis area increasingly important as wildlife habitat, spring and winter range, and as wildlife corridors. Since the grazing permits tie the private base properties lands to the NFS lands, retaining viable grazing permits aids in retaining private lands in agricultural uses, therefore maintaining more open space. Negative effects are noted with regard to the ability of fire to play its natural role in an ecosystem when there are an increasing number of homes in the area.

Alternative 1 (No Permitted Livestock Grazing)

In addition to the discussion in section 3.17 above, the following alternative-specific information and discussion is provided.

Rangeland Vegetation, Forested Vegetation, Soils, Botanical Resources. Removal of livestock grazing would be expected to result in changes over time to the herbaceous plant communities in those areas currently moderately or heavily grazed. In the uplands, the communities most likely to be affected are those having flatter slopes, relatively close to water, that are primary entry and exit gates, and those grazed early in the season when upland grasses are most palatable. Changes may be most apparent as increases in cover or composition for those species most preferred for grazing by livestock or wildlife. In most instances, these would be native grass species, although some forbs may also increase. Conversely, there may be a slow decrease in the biodiversity of the site as some native forbs are suppressed by the increased grass growth. Over longer periods (10 years or more), grass plants (primarily bunchgrasses) tend to stagnate in the absence of disturbance (DeKeyser et al. 2009). The low probability of relatively

frequent re-occurring fire (either natural or prescribed), and except for isolated areas such as spring or fall transition ranges where there are varying levels of forage harvest occurring from wildlife, it is likely that the canopy would be more open. Some of this open space may be occupied by forbs, but for the most part the niche would be occupied by grass roots and little space or resources would be available for native forbs. Litter would likely increase over time. In some areas, this would be beneficial due to the current scarcity of ground cover. However, in many areas of the analysis area, litter is adequate or high due to lack of disturbance. Livestock exclusion would exacerbate this issue further.

Exclusion of livestock would result in benefits to soils where there are currently trailing or trampling impacts. These effects are relatively minor and localized; therefore, any improvement would be localized and would occur over a long time frame as indicated by experience with other vacant or abolished allotments.

The cumulative effect of no livestock grazing on fire and fuels would be the potential for increased amounts of fine fuels in the form of grasses, forbs, and accumulated litter. This effect would compound over time as litter accumulations in ungrazed plants continued to build. These dead and dry fine fuels would in time be potentially more susceptible to carrying a ground fire, contributing to the rate of spread, and potential ignition. In the case of prescribed fire, these fuels could be important in helping to carry a controlled burn. These same fuels may be hazardous in the case of an uncontrolled wildfire. However, even under current management, livestock grazing practices are often adjusted to ensure that adequate fuel is available to complete the prescribed burn and the area is usually rested post-burn to ensure adequate recovery (USDS Forest Service 1997a). In addition, much of the upland areas are only grazed lightly or not at all (in non-suitable rangelands, or steeper or less well-watered areas of secondary range); and therefore, the net effect of excluding livestock on fuels is likely to be negligible in most instances.

Recreation. Elimination of livestock grazing from the analysis area may increase the attractiveness for certain types of recreation. OHV use may increase, resulting in increased impacts on riparian areas from off-road use. These impacts are frequently associated with soil erosion, plant community disturbance, invasion of noxious plants or other invasive species (e.g., increased niches available due to disturbed and bare soil combined with increased seed transport). Occasionally, those recreating on the Forest have expressed that presence of livestock and the associated infrastructure (fences and water developments) negatively affects their visit. Other recreationists enjoy the idea of livestock grazing as a heritage of the West and would not like to see livestock excluded. More dispersed camping may occur since campers would not be encountering livestock during their visit.

Roads and Trails. Under the no livestock grazing alternative, road and trail effects would not be changed significantly and would be as described in section 3.5. There would be less livestock trailing on these areas and a corresponding decrease in soil movement. However, this effect from livestock is minor and not measurable.

Riparian and Aquatic Resources. Natural hydrologic processes produce changes that are amplified by the presence of beaver. As beaver build dams, surrounding riparian hardwoods are harvested and some portion of the area is flooded. This expands the riparian zone and can raise the water table. As more and more water is held within the riparian system, there is more opportunity for water-loving grasses, grass-like, and shrubs to colonize and expand. When high intensity run-off events occur, beaver dams often fail and large amounts of water can be released all at once. These run-off events can scour banks, incise channels, break meanders, and deposit

loads of sediment. Eliminating livestock grazing may in the short term result in increases in willows and other preferred species for beaver. This could potentially increase beaver activity. However, properly managed livestock grazing ensures more than adequate beaver habitat and has little to no effect on this species or on the hydrologic process that they affect.

Removal of livestock grazing may result in increased opportunities for improved fishing along more miles of stream if riparian and stream communities improve at an increased rate than under livestock grazing. However, recovery is currently occurring on most riparian/stream areas under improved livestock grazing and would improve even faster with implementation of better management. Therefore, the effects of livestock removal on riparian and stream habitats is likely to be one of incremental improvements and would focus on those areas that are most difficult to manage (e.g., the flatter topography willow communities at lower elevations).

TES, MIS, and Wildlife Resources. The cumulative effect of no livestock grazing on large wild ungulates would be reduced competition for forage and cover resources in the first few years of livestock exclusion when a shadow-effect of nutrient-enhanced grasses remains from cattle grazing. Elk and deer tend to graze areas previously grazed by cattle because the regrowth of those grasses is higher in nutrition and lower in fiber than ungrazed grass. Having large wild ungulates preferentially grazing and browsing on public lands reduces the amount of time that they spend grazing on private lands, and therefore, the impacts to private pasture lands or hayfields. The long-term effect of removing cattle grazing from the rangelands is to have large wild ungulates (and the predators that hunt them) spending increasing time on private lands where forage quality is maintained by grazing or haying, which increases the potential for wildlife/human conflicts.

Heritage Resources. This alternative would have little cumulative effect on heritage resources since there would be no livestock in the analysis area. The most important effect may be a short-term increase in standing plant cover in specific areas that currently receive moderate or higher livestock use. This could help conceal artifacts from collectors. However, the long-term effect of no livestock grazing (assuming that fire cannot reasonably become the primary and reoccurring disturbance agent) would be a reduction in plant vigor and a general opening of the herbaceous canopy. Over time, this could make artifacts more susceptible to illegal collection. In areas of concentrated livestock use, elimination of livestock could result in reduced hoof impact (e.g., compaction and mixing). However, most of these sites have already been impacted for over a century and it is unlikely that any additional impact would occur from continued and better managed livestock use.

Invasive/Noxious Plants. Some species of noxious plants can be suppressed in areas where livestock graze, especially if cattle are managed to graze noxious plants when they are most impacted during the plants growth cycle. Conversely, areas where cattle concentrate or have historically concentrated, may have higher occurrences of bare ground, increasing susceptibility to noxious plant invasions. The difference between excluding livestock and properly managing livestock would be one of spatial extent and degree. Principally, properly managed livestock grazing results in light to moderate use of the herbaceous or shrubby plants, maintains or improves vigor, and results in little to no increases in bare soil (niches for invasion). The exceptions are usually in areas of concentrated use such as near gates, water, and trails. Overall, livestock exclusion would eliminate one potential vector for seed transport and one disturbance factor that has the potential to create niches for invasion. However, without permitted livestock, areas that are regularly visited for livestock management would no longer be visited, potentially allowing infestations to go undetected for longer periods. Given that current livestock

management is resulting in few areas where bare soil niches are being created, eliminating livestock would result in relatively minor improvement.

Socio-Economics/Private Lands/Open Space. This alternative could have some minor social effects on Forest recreation user. The absence of livestock may improve the quality of experience for some recreationists, and could result in more recreation use, thereby bringing additional money to the local economy, but also increasing administrative costs. Other recreationists enjoy the idea of livestock grazing as a heritage of the West and would not like to see livestock excluded.

The no-grazing alternative would have negative effects on permittees and local communities dependent on their leadership, character, historical connection, and economic input. Some operations would likely go out of business. Although, it might be a small number of total jobs lost, those losses combined with other dependent economic losses in the area could have multiple and exponential effects. Ranching operations contribute to local economies directly through sales, job creation, support services and businesses, and indirectly by supplying secondary markets such as food processing and sales.

Circumstances such as drought and increased fuel prices could force even more agricultural producers out of business. If a substantial number of agricultural producers go out of business, people may relocate out of the area. The loss of businesses and residents contributing to the local economy could create additional job losses. Furthermore, as ranching operations go out of agricultural production, open space and habitat integrity are lost. Lands sold for second homes negatively impact open space, connectivity, and wildlife habitat (fragmentation), water uses, and roads (related sediment effects), and can lead to invasive plant importation and spread, and other impacts associated with exurban development (Talbert 2007).

As agricultural lands are lost to development, communities bear higher costs. Privately owned and managed agricultural land generates more in local tax revenues than it costs in services. Carefully examining local budgets in cost of community services (COCS) studies shows that nationwide farm, forest, and open lands more than pay for the municipal services they require, while taxes on residential uses consistently fail to cover costs.

Compliance with Forest Plan

Cumulatively, this alternative does not meet Forest Plan goals and objectives for rangeland conditions, livestock and wildlife forage and cover production, and socio-economics in management areas of the analysis area (USDA Forest Service 1996a).

Alternative 2 (Current Livestock Grazing Management)

In addition to the discussion in the “Cumulative Effects Common to all Alternatives” section above, the following alternative-specific information and discussion is provided.

Rangeland Vegetation, Forested Vegetation, Soils, Botanical Resources. The effect of continued current livestock grazing management on the allotments would be to maintain current levels of residual vegetation, litter accumulations, overall plant vigor and bare ground. Areas currently not moving towards or achieving desired conditions would likely remain in the current condition or would slowly move toward desired conditions. Current management limits the ability to respond to periodic disturbances such as drought or wildfire. Timber sales in the analysis area may provide transitional range for a limited amount of time.

Current compliance monitoring of allotments is less stratified and does not focus on areas that would most likely respond to management changes. Current grazing utilization patterns are likely to remain the same. This alternative limits the ability to provide long-term management options to meet desired conditions in the most efficient and timely manner, and does not encourage increased management by rewarding proper management and penalizing poor management as appropriate.

Under the current management alternative, there would be less flexibility to quickly respond to needs of prescribed fire to retain fine fuels prior to the burn, and to provide for recovery after the burn. Overall, forage harvest would not change from current levels.

Assuming that prescribed burning increases slightly and wildfires continue at approximately current levels, there would continue to be large acreages where disturbance regimes are unable to operate at near natural levels. Bunchgrass plants would continue to stagnate and there would be some areas of continued encroachment of conifer regeneration into grassland or shrubland communities.

Recreation. Under this alternative, recreation, especially dispersed recreation involving OHVs, would continue to increase over time. This would continue to impact soils and plant communities in localized areas. The conflicts inherent between recreationists and livestock would continue and likely increase with increased recreational use. Under the current management alternative, there would be less flexibility to quickly respond to recreational conflicts.

Roads and Trails. The cumulative effects relative to roads and trails would not be greatly changed from the current management alternative in that the direct effects of those facilities will continue regardless of alternative selected (see section 3.5 “Recreation”). The additive effect of livestock impacts plus road and trail impacts will remain at current levels or increase due to increased OHV and ATV use relative to sediment movement, stream and riparian areas, and to a small extent to upland vegetation.

Riparian and Aquatic Resources. Under the current management alternative, improvement of riparian areas would be limited and have minimal cumulative benefit to the overall watershed health. There would be minimal control of permitted livestock use in riparian areas due to limited management options. Previously established moderate- to heavy-use patterns in riparian areas would tend to reoccur annually. Riparian areas and upland watersheds that negatively contribute to aquatic resources and fisheries habitat within the watershed downstream would likely continue. Impacted streams from livestock management would maintain current conditions.

Existing constraints would limit management options to reduce impacts and there would be limited ability to adjust timing, intensity, duration, and frequency of livestock in an attempt to maintain or improve riparian and stream habitat conditions. This would result in overall neutral or negative cumulative effects if impacts from other sources such as recreation or noxious plants do not increase greatly.

TES, MIS, and Wildlife Resources. Effects from alternative 2 would likely be similar to those previously described. Management options would be limited to respond to situations where there is a need to increase forage retention or conditioning, or where there is a need identified to minimize conflicts between livestock and specific TES/MIS/wildlife species or habitats. This limited management would likely maintain habitat relationships where conflicts are identified.

Management is limited to respond to areas where the combined impact of large wild ungulates and livestock is having a negative impact on resources. Elk and deer would continue to utilize the areas during periods when plants and soils are most susceptible to damage. Coordination would continue with the CDOW to (1) manage populations within grazing capacities, (2) encourage deer and elk to remain on higher elevation lands rather than migrating en masse to the lower private lands, and (3) attempt to distribute the animals across wider ranges. To the extent that these efforts are at all successful, impacts to soil and vegetation should decline slightly.

Heritage Resources. Current management would have minor cumulative effect on heritage resources. The most important effect may be a continued reduction in standing plant cover, uncovering or damaging artifacts in specific areas that receive moderate or higher livestock use. In areas of concentrated livestock use, hoof impact causing compaction and mixing would continue. However, most of these sites have already been impacted for over a century and it is unlikely that any additional impact would occur from continued livestock use.

Invasive/Noxious Plants. The likelihood of invasion by noxious plants would likely increase under alternative 2. As detailed under the “Rangeland Vegetation, Forested Vegetation, Soils, Botanical Resources” section above, expected occurrences of bare ground would remain constant. This would provide areas susceptible to invasion by noxious plants or other invasive plants. Areas of concentrated use would continue and remain susceptible to noxious plant invasions. Current sources of seed transport associated with livestock management would continue under this alternative. Overall, this alternative will result maintaining available niches for invasion and possibly increasing seed availability (relative to livestock management). Other effects, such as fire, timber harvest activities, road maintenance (and limited construction), and recreational activities (especially OHV use) would continue to result in soil disturbance and importation of invasive plant seeds or propagules.

Socio-Economics/Private Lands/Open Space. This alternative would most likely have minimal cumulative effects on social and economic resources. Socially, conflicts between permittees and those who recreate on the Forest would remain or increase with increased recreational use. Costs would remain relatively constant for this alternative. Continued demand for land for second homes would continue to affect land values, economic viability of livestock operations, and costs of doing business.

Compliance with Forest Plan

Cumulatively, this alternative meets Forest Plan goals and objectives, including those specific for range and wildlife forage and cover production in management areas of the analysis area.

Alternative 3 (Adaptive Livestock Grazing Management)

In addition to the discussion in the “Cumulative Effects Common to all Alternatives” section above, the following alternative-specific information and discussion is provided.

Rangeland Vegetation, Forested Vegetation, Soils, Botanical Resources. The effect of improved livestock grazing management through adaptive management on the allotments would provide an increase in residual vegetation where needed, reduce litter accumulations in some of the areas where it currently exceeds desired conditions, lessen amounts of bare ground where it currently exceeds the desired conditions, and increase the overall vigor of plants through better distribution of livestock across the allotments. Increasing beneficial vegetation and improving its vigor ensures that adequate material is available for trapping sediment during runoff and overland flow events. Additionally, adequate litter (not excessive) insulates plant crowns and

over-wintering buds, protects and covers soil, holds moisture in the ground and allows the plants to continue photosynthesis for carbohydrate production and storage. Greater carbohydrate storage results in increased root production for each plant. This increases the erosion defensibility and moisture-holding capability of soils, and provides a buffer to plants in times of stress (such as drought). Timber sales and beetle kill timber areas in the analysis area may provide transitional range for a limited amount of time.

The adaptive management alternative provides constrained flexibility to respond to periodic disturbances such as drought or wildfire in that it provides for pre-planned management options to such events (such as the use of forage reserve allotments and the ability to make use of pastures scheduled for periodic rest).

Monitoring of key areas and benchmarks provides insurance to all other areas of the pasture, since these areas have been identified throughout the analysis area to reflect the effects of livestock grazing and its management on the entire pasture. If proper management is being applied, the effect is more uniform utilization of forage throughout the allotments. Promoting uniform utilization allows previously ungrazed plants the opportunity to be grazed, thus stimulating growth, and provides selectively grazed plants rest by being grazed fewer times. Achieving more uniform utilization within a pasture may provide more available forage and therefore offer livestock an opportunity to graze longer in a particular pasture as opposed to moving quickly through pastures if cattle are allowed to congregate. Adaptive management would provide long-term management options to meet desired conditions in the most efficient and timely manner, and would encourage increased management by rewarding proper management and penalizing poor management as appropriate.

Under the adaptive management alternative, there would be greater opportunity to respond to needs of prescribed fire to retain fine fuels prior to the burn, and to provide for recovery after the burn due to the flexibility built into the management systems. Overall, forage harvest would not likely increase or decrease notably from current levels; however, control over livestock effects would certainly improve on much of the suitable rangeland. There would be increased utilization on some portions of the secondary rangeland as livestock distribution is improved. This would result in greater plant vigor, but would also result in some loss of decadent plant fuel.

Assuming that prescribed burning increases slightly and wildfires continue at approximately current levels, there would continue to be large acreages where disturbance regimes are unable to operate at near natural levels. This would continue the current situation of stagnant bunchgrass plants and continued encroachment of conifer regeneration into grassland or shrubland communities.

Recreation. Recreation, especially dispersed recreation involving OHVs, would continue to increase over time. This use would continue to impact soils and plant communities in localized areas. The conflicts inherent between recreationists and livestock would continue, but should decrease as livestock management improves and as additional public education efforts have the desired effect. An educated public would experience fewer conflicts and may be more tolerant of livestock grazing and other extractive uses in the future. The adaptive management alternative would provide increased flexibility to quickly respond to recreational conflicts.

Roads and Trails. The cumulative effects relative to roads and trails would not be greatly changed from the current situation; direct effects of those facilities would continue regardless of alternative selected (see section 3.18). However, the adaptive management alternative would improve the control of timing, intensity, duration, and frequency of livestock grazing and would

reduce the overall cumulative effects to most other resources. The additive effect of livestock impacts plus road and trail impacts would be reduced relative to sediment movement, stream and riparian areas, and to a small extent, upland vegetation.

Riparian and Aquatic Resources. Under the adaptive management alternative, increased improvement of riparian areas would have a cumulative benefit to overall watershed health. Improved riparian areas and upland watersheds can improve aquatic resources and fisheries habitat within the watershed downstream. Streams would be healthier and would be able to better withstand the effects from other activities occurring in the watershed.

The proposed adaptive grazing management strategies would help maintain or improve riparian and stream habitat conditions by better controlling the timing, intensity, duration, and frequency of livestock use and by allowing management to more quickly respond to negative monitoring findings. This would result in overall positive cumulative effects if impacts from other sources such as recreation or invasive plants do not increase greatly.

TES, MIS, and Wildlife Resources. Effects from alternative 3 are likely to be similar to those described previously, except that intensified livestock management would be better able to respond to situations where there is a need to increase forage retention or conditioning, or where there is a need identified to minimize conflicts between livestock and specific TES/MIS/wildlife species or habitats. This improved flexibility and responsiveness would greatly improve habitat relationships where conflicts are identified.

Adaptive management practices planned for livestock management in the spring/fall transition rangelands should help to minimize the overall combined impact of large wild ungulates and livestock. While the livestock timing and intensity can be controlled and managed, elk and deer would continue to utilize the areas during periods when plants and soils are most susceptible to damage. Coordination would continue with the CDOW to manage populations within grazing capacities, to encourage deer and elk to remain on higher elevation lands rather than migrating en mass to the lower private lands, and to attempt to distribute the animals across wider ranges. To the extent that these efforts are at all successful, impacts to soil and vegetation should decline slightly.

Heritage Resources. Cumulative effects of implementing alternative 3 would be similar to those described for alternative 2, although there should be localized improvement in plant cover and structure capable of concealing heritage resources from collectors.

Invasive/Noxious Plants. As detailed under the “Rangeland Vegetation, Forested Vegetation, Soils, Botanical Resources” section above, expected decreases in bare ground results in more plants holding soil in place while lessening the likelihood of invasion by noxious plants. There would continue to be some unavoidable areas of concentrated use that would be susceptible to invasion by noxious plants or other invasive plants. However, these would become less widespread. Improved livestock grazing management actions to prevent or inhibit transport of noxious plant seeds would also be employed under this alternative. Overall, this alternative would result in fewer seeds (relative to livestock management) and fewer niches for invasion. Other effects, such as fire, timber harvest activities, road maintenance (and limited construction), and recreational activities (especially ORV use) would continue to result in soil disturbance and importation of invasive plant seeds or propagules.

Socio-Economics/Private Lands/Open Space. This alternative may have some minimal cumulative effects on social and economic resources. It is difficult to project what the

cumulative effects would be since it is unknown how the permittees would adjust to the new requirements. Socially, this alternative could help to minimize conflicts between permittees and those who recreate on the Forest. Costs to implement adaptive management would likely increase for permittees. However, the added costs would result in improved management and a greater potential for long-term stability for the operations. Continued demand for land for second homes would continue to affect land values, economic viability of livestock operations, and costs of doing business.

Compliance with Forest Plan

Cumulatively, this alternative meets Forest Plan goals and objectives, including those specific for range and wildlife forage and cover production in management areas of the analysis area. It also best meets the goals for local community stability (USDA Forest Service 1996a).

3.20.1 Summary of Cumulative Effects Analysis

The following summarizes the analysis discussed in sections 3.4 to 3.16.

Alternative 1 (No Permitted Livestock Grazing)

Based on the individual resource cumulative effects, this alternative has the most cumulative effects and would have the greatest overall impact. The no-grazing alternative cannot provide the disturbance effects required in many plant communities. The lack of disturbance is an important factor in explaining why this alternative does not adequately manage habitat needs. It is likely that livestock exclusion would result in the most rapid recovery of riparian and aquatic resources, but it does so by forgoing a viable use of those resources. One vector for invasive/noxious plant seed transport would be eliminated; however, livestock grazing permittees also participate in detection and treatment programs and this management tool would be eliminated.

Some recreationists that prefer no livestock would be satisfied, but those that like the presence of livestock would miss their presence. The additive effect of roads and trails with livestock grazing may be slightly decreased under the no-grazing alternative; however, the net effect would not be considerably different from the action alternatives. Elimination of livestock grazing would result in no need (or funding) to conduct additional heritage surveys and could, over time as plants stagnate, result in increased open space between grass plants. Increased open space facilitates discovery of artifacts by unauthorized collectors. Livestock impacts to heritage resources, such as trampling, would be eliminated.

The no-grazing alternative has the most impacts to local social and economic conditions because it eliminates an important stable part of the local economy. In addition, it clearly promotes increased subdivision of private lands once livestock grazing is no longer viable due to loss of the summer forage resources provided by the analysis area. Many of the ranch operations may be forced to sell to recoup economic losses. The net result would be increased fragmentation of wildlife and native plant habitats, loss of access to public lands, and increased operating costs to counties.

Alternative 2 (Current Livestock Grazing Management)

Based on the individual resource cumulative effects, the current livestock management alternative has less cumulative effects than alternative 1, but more than alternative 3, and would have minimal flexibility to respond to cumulative effects. This alternative cannot provide adequate

livestock management to manage impacts in localized areas, or management flexibility necessary to quickly respond to changing social and resource conditions. This alternative does allow for slow recovery, but continues to have localized unacceptable impacts. The lack of flexibility does not adequately allow for responding to habitat concerns and changes in a timely manner.

Livestock would continue to be a vector for invasive and noxious seed, but livestock grazing permittees participating in detection and treatment programs would likely result in a diminished invasive species presence.

Some recreationists that like the presence of livestock would be satisfied, but those that prefer no livestock would still encounter livestock. The additive effect of roads and trails with livestock grazing would not have a significant cumulative effect, yet would be the least able to mitigate cumulative effects. The need (and funding) to conduct additional heritage surveys would likely be diminished and management flexibility would be restricted in responding to new heritage findings. Existing heritage sites would continue to have a low level of impact, but cumulatively this would not be significant.

The current management alternative would have no immediate economic cost increases to ranch operations, but the viability of the operations would continue to be in question as increasing pressures would force changes to management. Limited management flexibility may limit operations to diversify or adapt to a changing economic atmosphere.

Alternative 3 (Adaptive Livestock Grazing Management)

Based on the individual resource cumulative effects, adaptive management has the fewest and least significant cumulative effects. The adaptive management alternative would provide the best mix of resource uses and values while minimizing cumulative effects. It would minimize effects to vegetative and soil resources by allowing increased flexibility and control over timing, intensity, frequency, and duration of livestock utilization. This would improve plant health and vigor, reduce the extent of low vigor or stagnant herbaceous plants suffering from lack of suitable periodic disturbance, and provide acceptable impact to those species of concern that need periodic disturbance while minimizing impacts to other species. This alternative would be capable of providing acceptable recovery rates; not as quickly as no grazing, but better than the current management; while still allowing for a use of the resources by permitted livestock. Areas that have minor impact could be more effectively managed. Habitat needs would be best met by providing management flexibility to respond to resource needs. The adaptive management alternative would result in the greatest recovery of invasive and noxious plant impacted sites, the best potential to adapt management to control noxious plants, and the fewest sites available for invasion. In addition, adoption of prevention tools under this alternative also renders it preferable to the current management alternative.

The adaptive management alternative would provide the most flexibility to respond to concerns associated with recreation management and livestock grazing. Based on the above analysis for roads and trail, the no-grazing alternative provides the best opportunity to minimize cumulative effects; however, adaptive management would not result in a significant increase in cumulative effects. Adaptive management would result in the most acres surveyed for heritage resources and at the same time result in the greatest extent of effective cover and structure to protect heritage resources from artifact collectors. Management flexibility would be able to respond to new heritage findings. There would continue to be some level of impact to heritage sites, but this would not be cumulatively significant under either action alternative.

The adaptive management alternative would increase immediate operating costs; however, it would also improve the viability of the operations over time in that they would be better positioned to adapt to changing resource and economic concerns. Under any circumstances, the pressures from private land development and second home buyers would continue to increase.

Chapter 4.0 List of Preparers

4.1 Introduction

This chapter identifies the individuals on the South Saguache Analysis Area Interdisciplinary Team responsible for preparing this EA.

4.2 Interdisciplinary Team Members

The team members are listed below.

Team Member	Title
Dean Erhard	<i>Ecologist</i>
Kent Smith	<i>Fire</i>
Dwight Irwin	<i>Wildlife Biologist</i>
Barry Wiley	<i>Fisheries Biologist</i>
Sean Noonan	<i>Recreation Specialist</i>
Mary Nelson	<i>Timber</i>
Kelly Ortiz	<i>Landscape Architect</i>
Dustin Walters	<i>Soil Scientist</i>
Phil Reinholtz	<i>Hydrologist</i>
Doug Simon	<i>Geographical Information System Specialist</i>
Gary Snell	<i>Rangeland Management Specialist</i>
Angie Krall	<i>Archeologist</i>
Lisa VanAmburg	<i>Rangeland Management Specialist/Interdisciplinary Team Leader</i>

Chapter 5.0 Agencies, Tribal Governments, and Individuals Consulted

The Forest Service consulted numerous Federal, State, and local agencies; Tribal governments; and individuals/organizations during the development of this environmental assessment; they are listed below.

5.1 Federal, State, and Local Agencies

Congressman John Salazar
Saguache County Commissioners
Senator Michael Bennet
Colorado Division of Wildlife

5.2 Tribal Governments

Name	Tribal Association
Chairman Ben Nuvamsa	The Hopi Tribe
Chairman Clement Frost	Southern Ute Indian Tribe
Chairman Curtis Cesspooch	Uintah & Ouray Tribal Bus. Comm.
Chairman Ernest House, Sr.	Ute Mountain Ute Tribe
Councilman Ernest Mirabal	Pueblo Of Nambe
Director Lorene Willis	Office of Cultural Affairs
Governor Dennis F. Vigil	Pueblo Of Nambe
Governor Earl Salazar	San Juan Pueblo
Governor Gilbert Suazo, Sr.	Taos Pueblo
Governor James Mountain	San Ildelonso Pueblo
Gov. Joseph Michael Chavarria	Santa Clara Pueblo
Governor Nelson Pacheco	Pueblo of Santo Domingo
Governor Ronald Montoya	Pueblo Of Santa Ana
Mr. Alan S Downer	Navajo Nation Historic Preservation Department
Mr. Ben Robbins	Tribal Resource Administrator
Mr. Donovan Gomez	Tribal Administrator
Mr. Herman Agoyo	San Juan Pueblo
Mr. Leigh Kuwanwisiwma	Hopi Cultural Preservation Office
Mr. Neil Cloud	Southern Ute Indian Tribe
Mr. Terry Knight, Sr.	Ute Mountain Ute Tribe
Mr. Wayne Lomayestawa	Repatriation Coordinator
Ms. Betsy Chapoose	Uintah & Ouray/Northern Ute Tribe
President Joe Shirley	Navajo Nation
President Levi Pesata	Jicarilla Apache Tribal Council
Chairman Ben Nuvamsa	The Hopi Tribe

5.3 Individuals/Organizations

Name	Organization
Alan W. & Patti J. Gloe	
Anne Vickery	Colorado Mountain Club
Arlene W. Henderson	
Barbara A. & James M. Musick	
Ben Rizzy	Rocky Mountain Elk Foundation
Berniece Macklin and others	
Boh H. & Judy Petre	Donald Gene & Oniece M. Jennings
Bradley W. & Andrea G. Philleo	
Brian Guidry	
Bruce & Wanda Sue Bolton	
CJH Hill F.L.P.	
Candace S. Johnson	
Carl E. Wood	
Carl R. Cox	
Cherise V. & Gerald D. Blair, Jr.	
Christopher C. & Marla C. Condon	
Clark A. & Deborah L. Johnson	
Clayton S. & Danita Jones	
Curtis H. Pankow	
Dan Randolph	San Juan Citizens Alliance
David Bruce Montgomery	Cynthia Ann Cutts
David C. & Sue A. Hensley	
David G. & Maretta Colville	
David H. Rand	
David N. Daniel	Richard M. Hammond
Dennis J. & Jana D. Weaver	
Earl Davey	
Edward F., Jr. & Katherine A. Kulp	
Edward L. & Ina F. Dysart	
Edwin Bryant	
Edwin C. & Anne Nielsen	
Eric Lynn Holbrook	Leigh Ellen Mills
2 nd Lt. Governor Erik Fender	Director of Natural Resources
Eugene T. & Marlys M. Busch	
Floyd G. & Hazel D. Rogers	Paul & Shirley Linton
Gary & Alice Hill	
George M. Bowles, Trustee	G.M. Bowles Trust
George Whitten Jr	Sierra Club
Glenn Alexander	Alexander Mountain Ranch, Inc.
Gregory J. Vowels	Valerie J. Robson
Gunnison Ranger District	Gunnison National Forest
Harold Robertson	Carnero Creek Ranch Corp.
Henry A. Hall	
Impulse Ranch, LLC	c/o Dana Gibson & Kermit Krantz
James L. & Ruth A. Christy	
James L., Jr. & Margaret R. Curtis	Trusts
Jane M. & Terry Rust	
Jason Garcia	Land Claims Office
Jayne Smith	
Jeff Bergman	Colorado Wild
Jeff A. Brekke	
Jeffery I. & Ciejay Yoder	
Jeffrey Vernon Ware	

Jeremy Edmond Smith	
Joanie Berde	Carson Forest Watch
John & Cyndi M. Drake	
John J. Tschirky	Karen H. Koltes
Joseph M. & Sylvia A. Kusmik	
Kort E. Oyler	Estate of George E. Oyler
Larry L. Large	
Linda C. Peterson	
Lonnie D. Bauer	
Mary L. Osmond	
Matt Nehring	Trout Unlimited
Maury Wilson	Ross Wiley
Melvin J. & Rhonda J. Miller	
Michael Spearman	
Michael A. Pannell	
Mike & Christine Sewell	Rio Grande Western Land Co., Inc.
Norma J. Stremme	
Obbie Dickey	Colorado Cattleman's Association
Oscar Peterson	
Patricia Abscott La Farge	Revocable Trust
Perry D. & E. Denae Alsbaugh	
Pollock & Hillsted Partners	Crystal Hill Mining Co.
Richard M. & P. Kate Booth Doyle	
Rita K., Elvis A. & Walter A.	
Brandenburg	
Robert G. Lohr	
Robert W. & Carol Lee Dugan	
Rodney & Wanda Covington	
Ronald D. & Lisa G. Johnston	
Roy E. Archuleta	
Ruth Frye Et al	
Steve E. Crawford	
Steven W. & Karen Sue Reynolds	Vickie L. Starr
Tate Scanga	
Terry R. Frankhauser	Colorado Cattleman's Association
Thomas T. Macy	The Conservation Fund
Timothy J. Roberts	
Timothy J. & Beth Levine Rosen	
Trout Unlimited	San Luis Valley Chapter
Van E. Romney, Jr.	Poso Creek
W. J. Bigler	
William B. & Brandon Baca	

Chapter 6.0 Public Comment/Response

6.1 Introduction

This chapter displays the letters received during the 30-day public comment period and the Forest Service response to those letters. The legal notice announcing the availability of the EA for comment was published July 13, 2010, in the *Valley Courier*.

6.2 Public Comments

We received four letters in response to the EA for comment during the 30-day comment period. These letters are included in their entirety below. To facilitate the response to these comments, each comment letter was assigned a number (labeled in the upper right-hand corner of the letter), and each comment was consecutively numbered (in the extreme right-hand margin). The numbering system used the following format: 1-1 means letter number one, comment number 1; 1-2 means letter number one, comment number two; and so forth. Enumerated comments that extend from one page to the next are marked with a downward facing arrow.

Letter 1

Davey Family Partnership, LLLP
14997 Highway 285
Saguache, Colorado 81149
August 6, 2010

South Saguache Rangeland Allotment
Management Planning comments
Saguache Ranger District
46525 State Highway 114
Saguache, Colorado 81149

Re: Environmental Assessment – Rangeland Allotment Management Planning
On the South Saguache Analysis Area, July 2010
Saguache Ranger District, Rio Grande National Forest

Ladies and Gentlemen:

The purpose of this letter is to provide comments concerning the referenced Environment Assessment (EA). As the current permittee on the North Tracy allotment, that is included in the referenced EA, Davey Family Partnership has a great interest in the outcome of this analysis.

1-1

We recognize in today's political and legal environment that grazing on public land has become more of a privilege and less than a right as we have viewed it in the past. Regardless what we call these grazing rights or privileges, they involve a significant monetary investment in acquisition and maintenance.

We are the fourth generation of our family to graze our cattle on this public land. Our ranch and cattle grazing on public land began in the 1870's and has continued to this day. This allotment continues to be of significant economic importance to our ranch and has become some of our cultural identity. We obtain great satisfaction from the process of grazing our cattle on this land and being able to observe improvements in the vegetation and general condition of the land resulting from careful management.

1-2

As we understand the analysis in the EA as listed in Table 1.5-3., the Tracy Canyon C&H Allotment is currently meeting Forest-wide desired conditions. We are concurring with this assessment and feel that our past management of our cattle has assisted in achieving these conditions. We also note the concerns regarding Tracy Canyon described on page 31 and express are willingness to cooperate in achieving more improvements.

1-3

The three alternatives for action considered in the EA include:

1. No Action (No Permitted Livestock Grazing)
2. Current Livestock Grazing Management
3. Adaptive Livestock Grazing Management (Proposed Action)

1-4

We accept and support selection of the proposed action Alternative 3. Adaptive management is not unlike we manage our ranch in order to operate in a sustainable and profitable manner.

Page 2
South Saguache Rangeland Allotment
August 6, 2010

Grazing on the Tracy allotment is of economic benefit to our ranch as mentioned above, but there are broader benefits. We have and continue to produce a commodity that provides not only food, but also a long economic chain of jobs including trucking, meat cutting and retailing to name a few. Further, grazing on public lands helps our ranch operate successfully and support our community through payment of taxes and purchase of retail goods. Loss of grazing on public lands would result in a long-term decline of the community.

1-5

Sincerely,
Davey Family Partnership, LLC

Everett L. Davey, Partner

Helen Jane Whitten, Partner

John Allen Davey, General Partner

Letter 2



Wyoming Office
PO Box 1160
Pinedale, WY 82941
Tel: (877) 746-3628
Fax: (707) 597-4058
Email: Wyoming@WesternWatersheds.org
Web site: www.WesternWatersheds.org

Working to protect and restore Western Watersheds

Andrew Archuleta, District Ranger
Rio Grande National Forest
46525 State Highway 114
Saguache, CO 81149

August 9, 2010

Dear Paul,

Enclosed, please find our comments on the South Saguache Allotments EA. We incorporate all attachments by reference into these comments.

Unfortunately, due to a wide range of other deadlines these comments will be way briefer than we would like. We cover here some of the main issues.

The Forest Service needs to provide a complete listing of all applicable Forest Plan direction, standards and guidelines, as well as each of the Watershed Conservation Practices Handbook direction and how the proposed action complies with each. General statements that the project complies with Forest Plan direction are insufficient. The Forest Service needs to provide a rational basis for those conclusions.

2-1

FSH 2209.13 91.1 requires:

2-2

“Under the National Forest Management Act (NFMA), project level decisions which authorize the use of specific National Forest System lands for a particular purpose like livestock grazing must be consistent with the broad programmatic direction established in the LRMP. Consistency is determined by examining whether the project level decision will implement the goals, objectives, desired conditions, standards and guidelines, and monitoring requirements from the LRMP.”

A fundamental aspect of NEPA is to take a “hard look” at current management, conditions, assumptions and implementation. A NEPA document that fails to analyze the following violates the purposes of NEPA:

2-3

- 1) Validity of assumptions from previous NEPA processes
- 2) Accuracy of predictions from previous NEPA processes

- 3) Adequacy of Forest Service implementation of previous decisions
- 4) Permittee compliance with permit terms and conditions, AMP's, AOIs and other requirements
- 5) effectiveness of actions taken in previous decisions

These above items are absolutely critical to be part of this NEPA process. Without this critical link the validity of the current assumptions are baseless. Let's look at each one of these individually. Without analyzing the accuracy and validity of the assumptions used in previous NEPA processes one has no way to judge the accuracy and effectiveness of the current analysis and proposals. This vitiates the NEPA process.

The predictions made in previous NEPA processes also need to be disclosed and analyzed because if the accuracy was not there most likely you are making the same predictions in the current process and does you are process again will be vitiated.

A review of the adequacy of the Forest Service's implementation of current AMP's, AOIs and Forest Plan standards is essential to a valid NEPA process. For instance, if in previous processes, the Forest Service said they were going to do a certain monitoring plan or implement a certain type of management or require certain impact limits, that these were never effectively implemented, that is incredibly important for the reader and the decision maker to know. If there have been problems with Forest Service implementation in the past, it is not logical to assume that implementation will now all of a sudden the appropriate.

Another critical component is permittee compliance. If the permittee has have failed to properly comply with their permit terms and conditions and AMP and AOI requirements, including utilization requirements, rotation requirements and fence maintenance then it is absolutely critical to discuss this in the document and its effects on the proposed action. Permittee failure to comply with permit terms and conditions and other requirements shows two things, firstly that the permittee has a mail to implement even the minimal standards that are currently in place and secondly, it shows that the Forest Service has failed to take decisive permit action to ensure compliance. Both of these are very important aspects that must be discussed for a valid NEPA process, most especially when the FS as here is relying on adaptive management promises.

Another critical component is an examination of the effectiveness of the actions taken in previous decisions. A classic example of this is fences and water developments. Often, new fences and water developments are proposed to solve riparian issues in spite of the fact that these have been used for many decades without correcting riparian issues. Doing more of the same that has not lead to good results is not an effective strategy for public lands management.

The EA states that the proposed action is in compliance with NEPA, the Forest plan and other relevant federal and state laws and regulations, but nowhere within the document are these requirements specified nor is any rationale provided to support that conclusion. This is critical for informed decision-making as well as compliance with NEPA so that the decision-maker and the public can review the logic provided.

2-4

FSH 2209.13 93.3a requires:

“The team, using an interdisciplinary approach, should identify the desired rangeland conditions within the analysis area. Desired conditions should be specific, quantifiable, and focused on rangeland resources.”

2-5

Table 1.5-1 does not comply with this requirement.

2-6

FSH 2209.13 93.3c requires:

“Identification of resource management needs is simply the comparison of desired conditions with existing conditions to determine the extent and rate at which current management is meeting or moving toward those desired conditions.” (emphasis added)

2-7

The EA failed to meet this requirement. To say conditions are “moving toward” is meaningless without this information. For instance, everyone admits these lands were basically unmanaged until about the 1950’s. Given how severely degraded these lands were up through that time, it would not be surprising that things look better than 1950, but is that “moving towards” sufficient?

2-8

FSH 2209.13 93.3f requires:

“There is a two-part decision to be made for authorizing livestock grazing. The first part is whether livestock grazing should be authorized on all, part, or none of the project area.”

2-9

The EA failed to provide any information at all regarding the first requirement.

2-10

As is universal within Forest Service grazing NEPA processes, the defining of the adaptive management process in this case is woefully inadequate. While the EA cites both FSH 2209.13 and the Quimby document, the EA does not actually implement the requirements of either. We request that you review the R2 Adaptive Management Guidance document which clearly defines the minimum level of adaptive management.

2-11

FSH 2209.13 93.3g defines adaptive management as:

Adaptive management is an interdisciplinary planning and implementation process that provides for: 1) identification of site specific desired conditions; 2) definition of appropriate decision criteria (constraints) to guide management; 3) identification of pre-determined optional courses of action, as part of a proposed action, from which to adjust management decisions over time; and 4) establishment of carefully focused project monitoring to be used to make adaptive adjustments in management over time.

2-12

As stated previously, the DC’s laid out for benchmark areas don’t meet the requirement of the FSH. Additionally, as discussed in more detail in the Quimby document, “pre-determined” means “if this... then that”, not just a general ‘toolbox’ with everything stuffed into it. And lastly, the EA’s “monitoring plan” could hardly be called “carefully focused”

2-13

We attach the cited Quimby document with key sections highlighted. These sections need to be thoroughly reviewed as the EA does not implement most of them.

2-14

We also include as an attachment a useful document written by the US Fish and Wildlife Service on how to write goals and objectives. This document meshes closely with the R2 document discussed above.

2-15

In every grazing NEPA process the Forest Service conducts, the principal need is "for greater management flexibility" but little rational justification for this need is provided. Virtually every so-called "tool" the Forest Service wishes to have as part of adaptive management, has been available to it for decades. Most of these tools are part of the normal permit administration process.

2-16

The falsity of the Forest Service's purported need for "flexibility" is clearly exposed in FSH 2209.13 – 92 which states:

2-17

"The majority of these changes can be implemented administratively, provided the changes do not fall outside the scope of the NEPA decision. Examples of actions that may be taken without further NEPA analysis include alteration of management to respond to Biological Opinions or other ESA, Clean Water Act, or other consultation requirements; changes in specific dates of grazing, class of livestock to be grazed, grazing systems, or livestock numbers based on evaluation of monitoring results; and, implementation of the LRMP through modifications to the term grazing permit. Administrative actions to implement higher level decisions or to respond to monitoring results should be undertaken as a routine administrative action prior to initiating NEPA."

In the species calls sections the Forest Service lists most species as "may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or loss of species of viability range wide" but the document fails to provide any information regarding current populations or trends which is of course fundamental to a supportable call. For instance, if there are 30 individual plants of a particular species in the planning area or even in the forest as a whole is that a viable population? Would affecting 6 of those individuals not likely result in a loss of viability, assuming viability currently exists? This information is not provided.

2-18

The EA fails to discuss actual use within the allotments. Actual use is critical because frequently actual use is significantly lower than permitted use. Therefore the analyses of current conditions must be based on the fact of actual use not permitted use. For instance if 1000 head are permitted on a particular allotment but the 20 year average is only 500 head then current conditions are, of course, the result of actual use half that of permitted use. So analyses based on full permitted use would be vitiated. Such information is fundamental to a valid NEPA process.

2-19

The EA provides details regarding the actions taken by the 2 action alternatives and one can see that with very few exceptions they are identical. The few exceptions where the action alternatives differ are extremely minor and could not rationally be construed to be significant. In addition, the Forest Service's argument that current management is

2-20

inflexible is absurd. All the tools discussed have been available to the Forest Service for many decades and most can be implemented very easily through AOIs.

As is often the case with NEPA processes implementing adaptive management, we found no evidence within the NEPA document that the range of actions proposed as adaptive management had been actually analyzed for impacts or effectiveness. Further, we found no specific monitoring or measurable triggers or timelines which are necessary to define the adaptive management process. Adaptive management is solely based on monitoring as its foundation yet the Forest Service provided no commitment to conduct this monitoring.

2-21

FSH 2209.13 94.2 requires:

2-22

“The evaluation of a proposed action’s environmental effects must include the potential effects of all adaptive management options that may be implemented at some future point in time. For example if one potential option is to fence off a riparian area, the effects of that fence must be evaluated even if that management option may never actually be implemented.”

This was not done in the EA.

2-23

Again for the short or long-term monitoring we found no commitment, locations, triggers or measurable objectives.

2-24

The MIS section fails to comply with the extensive case law regarding management and analysis of MIS species. We request that they Forest Service read through this wide range of case law and correct its analysis in order to comply with NEPA and NFMA.

2-25

The analysis of impacts to and cumulative effects on cultural resources is insufficient. The document says that most of the suitable range areas have not been surveyed but that the few cultural resources known in suitable areas are being impacted. In addition the document states that continued livestock grazing "should not increase the potential for cumulative effects" which is of course not true. The programmatic agreement requires Class III surveys within potential impact areas. There is no evidence within the EA that this was done.

2-26

If you have a choice of paying \$1.35 per AUM on public lands and have all your fences and water developments constructed by the taxpayer why would you want to lease AUMs on the private market which cost 15 times that? So this "dependence" is manufactured by the below cost AUMs provided by the Forest Service.

2-27

If the Forest Service only used the PFC method as discussed previously, the PFC method does not equate with "robust stream health" as required in the Watershed Conservation Practices Handbook. The EA fails to provide information as to how stream health was determined.

2-28

The EA states that general capability and suitability determinations were made at the Forest Plan level, but ignores the requirements of FSH 2209.13 – 91 which states:

2-29

"Although an area may be deemed suitable for use by livestock in a LRMP, a project level decision evaluating the site-specific impacts of the grazing activity, in conformance with the National Environmental Policy Act (NEPA), is required in order to authorize livestock grazing on specific allotment(s)"

The document lists a number of so-called "Design Criteria" nearly all of which are currently in place and have been for many years and are reflected in current conditions. So the only 2 logical conclusions would be either, this has not been effective, or it has not been implemented in reality. Of course, either one of these conclusions were not discussed in the document.

2-30

Despite the fact that the document discusses significant riparian degradation occurring through nearly the entire project area the document fails to provide any annual streambank trample move trigger to deal with these physical impacts.

2-31

Like most agency NEPA documents this one likewise fails to provide an accurate picture. The proposed action is compared to current management as opposed to no grazing and results in inaccurate statements such as "overall, the direct and indirect effects of implementing the proposed alternative of livestock grazing using adaptive management would be positive in achieving or moving toward desired conditions for rangeland in riparian vegetation". Of course, this is false. The impacts of the proposed alternative are completely negative and provide no ecological or resource benefit other than of course, the private profit of the permittees. Now it may be that the proposed alternative is slightly less negative than current management but it is false to state that it would be positive.

2-32

In addition the cumulative effects section for cultural resources like most of the cumulative impacts "analyses" within the document failed to come close to even minimal standards as laid out in a wide range of case law.

The issues identified by the IT team such as those in table 1.5 -- 3 have not been translated into measurable objectives or implemented into the monitoring program.

2-33

Nearly 20% of the analysis area is MA 5.41 but the proposed action implements no management specific to the situation.

2-34

Table 2.5 -- 1 lists various "Design criteria" but we found nowhere in the document where these were actually implemented. For instance "livestock will be herded", while this is nice there is nothing implementing any requirement to do so or how it is to be done. Similarly, "in the California Gulch allotment, protection measures will be developed for heritage sites" but this has not been done.

2-35

"Key grass species will be given an opportunity to reach seeds that prior to grazing or will be rested for greater than half of the growing season post-grazing" but there is no information provided in the document that would lead to irrational conclusion that this has been implemented.

2-36

"Grazing would be limited to a 21 day maximum per pasture" but again there is no information that would indicate that this has been implemented.

2-37

Stubble height is based on the assumption of regrowth occurring prior to September but this assumption is not based on best available science. We provide his attachments 3 papers discussing the myth of regrowth.

2-38

Unfortunately, the no grazing alternative "analysis" uses, or I should say abuses, Knapp and Seastedt, to argue that without domestic livestock grazing, a non-native invasive species, the ecosystem will collapse. This is of course bogus. It is clear that the author of this section has not read the paper because a mere reading of the title clearly shows that it is entirely inapplicable to the Pike San Isabel National Forest. Since the office probably does not possess a copy of this misused paper, the full title is "Detritus Accumulation Limits Productivity of Tall Grass Prairie: The Effects of Its Plant Litter on Ecosystem Function Makes the Tall Grass Prairie Unique among North American Biomes".

2-39

We look forward to working with the Forest Service in fulfilling the intent of NEPA, NFMA and the other statutes and regulations the Forest Service works within, through a complete and accurate analysis of the impacts of the plan.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jonathan B. Ratner". The signature is stylized with large, flowing loops.

Jonathan B. Ratner
Director, Wyoming Office

Letter 3



Carol Lee Dugan
<cdugan@amigo.net>
08/10/2010 08:49 PM

To: Lisa K VanAmburg <lvamburg@fs.fed.us>
cc
bcc
Subject: letter from Dugans

Lisa,
We have recently reviewed your NEPA document which addressed our Sawlog and Cottonwood allotments. Your discussion on both areas is very clear and precise. We agreed with the document. Over the past several years that we have used our grazing allotment we have tried to be excellent stewards of the land, leaving the lease in the condition we feel the community members and public would accept. Our cattle are rotated continuously to keep the regrowth and condition of the ecosystem in balance. Both of us have placed our main head quarters of our ranch in a conservation easement, we use the same rules at home as we do on the Public Lands.

3-1

Cattle grazing in Public Lands addressed many factors: Quality regrowth of vegetation, weed control, assists with fire control, water resource developments for livestock and wild life, and water shed developments to conserve water. All of these items are addressed on our grazing allotment.

3-2

While riding the allotment we have also assisted recreational hikers with directions, given them pointers on place to visit as well as enlighten them on the ranching operation if questioned.

3-3

We both are aware of our role as permittees in managing the allotment for Forest Service and BLM regulations. Your NEPA document is part of this evaluation process which always checks and balances for parties involved with Public Lands.

3-4

Thank you for all the work and correspondence on our allotments.

3-5

Sincerely,
Bob and Carol Lee Dugan

Letter 4

L Cross Ranch
6790 County Rd 38 A
Del Norte, CO 81132

Mike Spearman, Manager

Andrew Archuleta
Saguache Ranger District
Rio Grande National Forest
46525 State Hwy 114
Saguache, CO 81149
August 10, 2010

Re: Comments regarding the Environmental Assessment on the South Saguache Analysis Area,
in particular, the Pasture and Cave Creek Allotments.

- 1.) I thought that the Environmental Assessment was very thorough and complete, as it should be. Speaking as a permittee this assessment will be a valuable tool as I plan for specific grazing rotations in future years. I have managed cattle to the best of my ability on these two Forest permits for over 25 years. I personally feel that the range is in good condition as a result of the ranch's management decisions in the past.
- 2.) The Pasture and Cave permits are very important to the sustainability of our ranch. Grazing on these permits is part of a year around management program with a goal of being a financially viable operation. This ranch sustains three families and occasionally returns some financial rewards to the owner's investment. The L Cross is representative of the ranching community that surrounds the San Luis Valley. Most of these ranches lie in the transition area between the Valley floor and the surrounding foothills. Ranches have historically been a major part of the SLV community and economy. The Forest Service permits and the ranches that serve as base property for the permits convert a great deal of forage into protein for human consumption. In the fall, the calves are weaned, sold and shipped to destinations all across the Midwest for fattening in exchange for revenue that returns to the Valley and furthers the local economy. If the permits were not available to the local ranchers most the remaining ranch units would no longer function profitably resulting in ranch failure and ultimately sub division and fragmentation of this beautiful landscape. The availability of the Forest Service permits

4-1

4-2

to ranchers is a key component in the Saguache County economy today as it has been for the past 140 years.

- 3.) In regards to Alternative # 3 – Adaptive Livestock Grazing Management, I am in complete agreement that this action should be the proposed action coming out of this document. The adaptive Management alternative will give the necessary flexibility to those administering the permits as well as the permittees. Once we have identified a specific problem on an allotment this type of flexibility give us many different tools to solve the problem. As a result of new technology and research coming out of our universities, management styles continue to evolve. A system that has built in flexibility and a variety of tools can adapt to these new management styles and philosophies. **4-3**
- 4.) Section on Monitoring : I am in complete agreement as to the importance of monitoring. I have utilized photo monitoring for 15 years and find it an effective way to evaluate what is going on in the plant community. I feel that the changes we have made over the years such as combining herds and moving cattle thru pastures much quicker has paid off in establishing positive trends in our pastures. (the photos indicate this as well) **4-4**
- 5.) I have read the list of proposed improvements found on page 149. I am certainly open to discussion as to the value of these improvements but I have not experienced any positive results in trying to utilize springs in the the Poso or the Moon Pass area. The cattle simply did not utilize the tanks effectively. Perhaps it was because our faster rotations did not encourage livestock to hang around tank areas. I have found these permits to be very well watered without the tanks and the loitering area that goes along with them. **4-5**
- 6.) I am very concerned the section 1.5.3 and corresponding Table 1.5.3 as they pertain to establishing a benchmark on Cave Creek which is within the Cave Allotment (page 9). Under the Need for Action definition on page 8 it states "Monitoring and inspection conducted in the analysis area indicated that there were six site-specific locations where a discrepancy existed between existing conditions and desired condition, resulting in a "need for action." -- The "need for action" in this case references the bare soil along the greenline that is susceptible to erosion. It is important to note that the bare soil at this location is currently less than 10%. So this site is already in a desired condition, action is not needed to establish desired condition. The erosion that exist, in my opinion is as a result of the public road in this area not as a result of cattle grazing. I can't personally control the public road only our ranch's cattle. Since this site is currently meeting desired conditions I would prefer that you strike some of this wording and replace it with the wording that you used for other benchmarks meeting desired condition such as the North Fork Carnero or San Juan Maez or Tracy Canyon. I am not against using this area as a benchmark, it is in good condition, and I will continue to refer to this location **4-6**

to make sure it stays in good condition. However, I truly believe that others who might be reading this document could easily misunderstand this language and think that the cattle are the source of the erosion and sediment problems.

Thank you for the opportunity to comment on this Environmental Assessment. Once again I found the document to be very thorough and complete. I would only ask that you consider some of the comments that I have brought forward. I look forward to working with all of the Forest Service employees as I have for the past 29 years.

Keep up the good work,

Michael J. Spearman, Manager, L Cross Ranch
719-580-2486

4-7

6.3 Agency Response to Public Comments

Table 6.3-1. Public comment reference and Forest Service Response

Com- ment Number	Forest Service Response
1-1	Your comment is noted.
1-2a	The commenter's long ties and caring for this particular area of national forest for maintenance of your way of life through generations and the building of local communities is noted.
1-2b	The Forest Service acknowledges the economic dependency of rural communities on National Forest System lands and resources. This is acknowledged in the Forest Plan desired conditions, EA for Comment chapter 3, section 3.18, and in the key issues section 1.9 (key issue 3).
1-2c	The Forest Service acknowledges your commitment to land stewardship.
1-3	We acknowledge your willingness to collaborate on future management of the allotment.
1-4	Your comment is noted.
1-5	Your comment is noted.
2-1	<p>Reiteration of the Forest Plan and the Watershed Conservation Practices Handbook (WCPH) would unnecessarily lengthen and burden NEPA documents. The Council on Environmental Quality (CEQ) says, "Tiering is a procedure which allows an agency to avoid duplication of paperwork through the incorporation by reference of the general discussions and relevant specific discussions from an environmental impact statement of broader scope into one of lesser scope or vice versa."¹ In this case, the South Saguache EA for Comment tiers to the EIS done for the Forest Plan and its accompanying Record of Decision. We mentioned this in the draft EA, chapter 1, section 1.6.1 (first paragraph).</p> <p>The Forest Service Directives System (i.e., Forest Service Manuals and Handbooks) is incorporated into the Forest Plan by reference (see Forest Plan, appendix B, page B-1). This includes the Watershed Conservation Practices Handbook (Forest Service Handbook 2509.25). The ID Team checks to ensure that the project is in compliance with the Forest Plan, which includes the Forest Service Directives System.</p> <p>The proposed action (see chapter 1, section 1.3) is compatible with the Forest Plan management direction (see chapter 1, section 1.6.1) pertinent to this analysis area, and this was validated by the ID Team.</p> <p>¹ From: Council on Environmental Quality – Forty most asked questions concerning CEQs NEPA regulations (40CFR 1500-1508) available online at: http://ceq.eh.doe.gov/nepa/regs/40/40p3.htm</p>
2-2	This is an accurate citation from FSH 2209.13 91.1.
2-3a	<p>The commenter alleges the EA has failed to analyze the "accuracy and validity of the assumptions used in previous NEPA processes."</p> <p>We disagree. Fundamentally, this EIS tiers to the EIS for the Forest Plan and its accompanying Record of Decision. The proposed action has been validated by the ID Team to be consistent with the Forest Plan. See our response to comment 3-1 regarding "tiering" relative to incorporation by reference and not reiterating previous analysis and discussions. The Forest Service uses monitoring at the broader Forest level to validate assumptions and predictions made in the Forest Plan (see Forest Plan, chapter V). A Forest-level report is produced every year summarizing results and is posted on the Forest's website. Then, the Forest Service relies on extensive monitoring at the project level to ensure that management is being applied as prescribed and that the project analysis area is meeting or moving toward desired conditions—including whether the rate of change is acceptable. A detailed monitoring plan has been developed for this project (see EA for Comment, appendix D).</p>
2-3b	<p>The commenter alleges the EA has failed to analyze the "accuracy of predictions from previous NEPA processes."</p> <p>See our response to comment 3-3a.</p>
2-3c	The commenter alleges the EA has failed to analyze the "adequacy of Forest Service

Com- ment Number	Forest Service Response
	<p>implementation of previous decisions.”</p> <p>See response to comment 3-3a. Our implementation monitoring (EA, chapter 2, section 2.9.1) is designed to benefit from past experience. Previous experience helps us design monitoring that is practical, cost effective, and efficiently addresses the monitoring question at hand.</p>
2-3d	<p>The commenter alleges the EA has failed to analyze the “permittee compliance with permit terms and conditions, AMPs, AOIs, and other requirements.”</p> <p>Permittee compliance is an administrative matter and is addressed on a case-by-case basis according to guidance provided in the Grazing Permit Administration Handbook (FSH2209.13). Implementation monitoring (EA, chapter 2, section 2.9) articulates and focuses on the requirements that permittees must abide by, and states that any non-compliance will be reported to the responsible official for possible administrative action (see EA for Comment, table 2.9-1, footnote 1). Under NEPA, we want the public to provide comment on the proposed monitoring plan. Administrative actions are not appropriately analyzed under NEPA.</p>
2-3e	<p>The commenter alleges the EIS has failed to analyze the “effectiveness of actions taken in previous decisions.”</p> <p>See our response to comment 3-3a and 3-30. The commenter specifically questions effectiveness of fencing riparian areas and developing water to solve riparian concerns. The water improvements proposed in the EA for Comment (EA, appendix C) are proposed to upgrade existing improvements to address advances in technology and are not proposed to address riparian concerns. The proposed fences are intended to address cattle drift between allotments or pastures, not riparian conditions.</p>
2-4	<p>See our response to comment 3-1. By tiering this project to the Forest Plan’s FEIS and its accompanying Record of Decision, it is expected that all applicable legal requirements would be met (see chapter 1, section 1.7). Furthermore, specialists reference legal, regulatory, and policy compliance in their detailed resource analysis, where appropriate. The commenter does not identify any specific violations.</p>
2-5	<p>This accurate citation is from the Region 2 Grazing Permit Administration Handbook interim directives FSH2209.13 93.3. Interim directives are provided as guidance not direction, standard operating procedures, or requirements.</p>
2-6	<p>Table 1.5-1 and its development by the ID Team are consistent with Region 2 Grazing Permit Administration Handbook interim directives.</p>
2-7	<p>See response to comment 2-5.</p>
2-8	<p>Analysis of desired conditions and existing conditions conducted by the ID Team on the analysis area is consistent with Region 2 Grazing Permit Administration Handbook interim directives.</p>
2-9	<p>See response to comment 2-5.</p>
2-10	<p>The EA for comment fully analyzes 3 alternatives. Alternative 1 is a no grazing alternative and is fully considered as an alternative. This analysis is consistent with Region 2 Grazing Permit Administration Handbook interim directives.</p>
2-11	<p>The commenter makes a general allegation that the EA inadequately defines adaptive management, but does not provide specific examples of deficiencies. The proposed action in the EA (see chapter 1, section 1.3) references our strategy to use adaptive management. This analysis is consistent with Forest Service Handbook 2209.13, chapter 90 and Quimby (2007).</p>
2-12	<p>See response to comment 2-5.</p>
2-13	<p>See response to comment 2-6; see also the definition of adaptive management, section 2.4.3. The purpose of adaptive management is to have flexibility to make changes in response to resource monitoring. Defining a specific grazing system would unnecessarily constrain this process. The proposed monitoring plan (appendix D) was developed to be commensurate with the level of livestock grazing use and the complexity of the overall situation and addresses items that must be monitored to meet desired conditions, objectives, and standards and guidelines. If needed, a commitment to increased monitoring will be made if the proposed monitoring reveals issues are not being adequately addressed, the</p>

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	level of monitoring is not adequate, there are other items that need to be monitored, information is not available in a timely manner, or any other unknown that may arise.
2-14	The commenter makes a general allegation that the EA inadequately implements guidance from Quimby (2007), but does not provide specific examples of deficiencies. The proposed action in the EA (see chapter 1, section 1.3) references our strategy to use adaptive management and we are consistent with Region 2 Forest Service Handbook 2209.13, chapter 90 and Quimby (2007).
2-15	Thank you for providing the document. We will review and incorporate into our process where applicable.
2-16	Chapter 1, section 1.5 states “ There is an overall need for greater management flexibility to cope with fluctuations in environmental and social conditions, but not limited to, annual changes in weather; to be responsive to visitor-use pattern changes; to be responsive to permittee requests for reasonable operational adjustments; and to respond to unforeseen issues”. Although the Forest Service has had many management options available, this analysis proposes additional management options that are not available under current management (alternative 2). One example is the change of season of use. Under alternative 2 the on/off dates are not flexible and require additional documentation for an exception annually if this is requested. Under the proposed management, this additional documentation would no longer be needed. There are many management options afforded in the proposed action that would require additional NEPA to implement under alternative 2.
2-17	Although the Forest Service has limited flexibility through current guidance in the R2 Forest Service Handbook, this analysis proposes additional management options that are not available under current management (alternative 2) and would require additional NEPA to implement due to being “outside the scope of the existing NEPA decision” document completed in 1994.
2-18	A biological evaluation was completed for all terrestrial and aquatic sensitive wildlife species that occur within the project area or may be influenced by project activities. The biological evaluation is consistent with Regional policy regarding sensitive species as directed in Forest Service Manual 2670, including any population and/or trend information needed to make determinations for each species evaluated. Chapter 3 of the EA is a summary of a more detailed analysis conducted in the respective biological evaluations (BEs) that were developed for terrestrial wildlife, fish, and plants to support this project. The BEs provide the detailed evaluation in order to support a viability affirmation. Specifically, in the case of plants, there are no sensitive species meeting the following two criteria: (1) the known species occurrence is primarily restricted to the analysis area, and (2) there is a high vulnerability of detrimental impact from the proposed actions. The sensitive plant species evaluated for this project occur in habitats known to exist across a much larger geographic area than just the analysis area. Known sensitive plant occurrence data are presented in the BE and these occurrences are typically over multi-county areas. There is no information known specifically for the sensitive plants evaluated in the BE to indicate that infrequent impacts (clipping or trampling) would clearly lead to a species viability concern. Thus, we reasoned that individual plants may, if at all, be affected at times by the proposed actions, but it was unlikely these effects would be of sufficient magnitude to cause an overall loss of species viability on the Forest. Project design criteria are specifically developed to reduce plant utilization and trampling impacts.
2-19	Actual use is addressed on a case-by-case basis according to guidance provided in the Grazing Permit Administration Handbook (FSH2209.13). Actual use for the analysis area was analyzed by allotment from pre-1950 to current dates to evaluate historical and current grazing utilization. Field surveys and analyses on the analysis area were conducted during the 2008–2010 seasons. Actual use was consistent with permitted use from 2006–2010 on the analysis area. Therefore, analyses would reflect conditions resulting from permitted use numbers. This information is summarized in chapter 3, section 3.4.
2-20	The EA for Comment fully analyzes three management alternatives (1) no grazing, (2) current management, and (3) adaptive management (the proposed action). All alternatives were evaluated with regards to the three key issues identified (see section 2.4). Table 2.8-1 shows key issue comparison of the alternatives and they are clearly different. Chapter 3 provides analysis for all affected environments for all three alternatives. See comment response 2-17.
2-21	Carefully selected adaptive management actions (table 2.4-4) have been identified and

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	<p>analyzed for effects on the analysis area. These management options would be used as outlined in section 2.4.4. The adaptive management actions are well-established and commonly known to mitigate livestock impacts. They are known to be effective based on extensive research. There are no actions in table 2.4-4 that would be commonly held in the scientific community to be considered experimental or untested. These actions are commonly accepted actions used on rangelands throughout the West. These actions are universally found in introductory rangeland management textbooks (such as Rangeland Management by Heady [1975]). Monitoring is addressed in chapter 2, section 2.9 in considerable detail for both implementation monitoring (section 2.9.1) and effectiveness monitoring (section 2.9.2) and appendix D contains a detailed monitoring schedule by allotment. These sections address the specific monitoring component, the frequency of monitoring, and the responsible party to conduct the monitoring. The EA makes a strong commitment to monitoring.</p>
2-22	See comment response 2.5.
2-23	<p>Chapter 3 analysis of affected environments is consistent with Region 2 Grazing Permit Administration Handbook interim directives and fully discloses any significant effects from all proposed alternatives.</p>
2-24	<p>Monitoring is addressed in chapter 2, section 2.9 in considerable detail for both implementation monitoring (section 2.9.1) and effectiveness monitoring (section 2.9.2) and appendix D contains a detailed monitoring schedule by allotment. Locations for proposed key and benchmark areas by allotment are provided in appendix B. These sections address the specific monitoring component, the frequency of monitoring, and the responsible party to conduct the monitoring.</p>
2-25	<p>The MIS analysis for the South Saguache Range Analysis EA complies with regional policy and guidance for MIS. This guidance is based on existing case law for MIS as interpreted by Forest Service Region 2 and is consistent with the Forest Plan. There is no need for additional analysis or corrections for MIS as associated with this project.</p>
2-26a	<p>The commenter alleges the EA has failed to sufficiently analyze the “impacts to and cumulative effects on cultural resources.”</p> <p>Forest Service policy (FSM 2361.3) requires that projects with the potential to effect heritage resources, or land which will leave Federal agency control through sale or exchange, be surveyed for heritage resources in order to comply with 36 CFR 800, the National Historic Preservation Act of 1966, as amended, the Archeological Resources Protection Act (NHPA) of 1979, the American Indian Religious Freedom Act (1979), and the Native American Graves Protection and Repatriation Act (1992).</p> <p>The analysis for heritage resources focuses on the areas of potential effect (APE) identified by range and heritage personnel. These are areas where livestock congregation and high site probability overlap. The APE data for heritage resources is drawn from a summation of archival records, site visits, and class III heritage resource inventories within the APEs conducted in 2008 and 2009. A detailed analysis was documented in a Section 106 National Historic Preservation Act (NHPA) report and sent to the Colorado State Historic Preservation Office (COSHPO) for consultation.</p> <p>This guidance is based on existing case law for heritage resources as interpreted by Forest Service Region 2 and is consistent with the RGNF Forest Plan. The COSHPO concurred with the development of the APE and with determinations of effect with a finding of no adverse effect on July 30, 2010. There is no need for additional analysis or corrections for heritage analysis as associated with this project.</p>
2-26b	<p>The EA for Comment does not contain the alleged quotes, therefore we cannot respond to this comment.</p>
2-26c	<p>The commenter refers to a programmatic agreement and associated requirements of the agreement were not fulfilled.</p> <p>A programmatic agreement with the COSHPO for range projects does not exist for the RGNF. The RGNF consults with the COSHPO on a project-by-project basis. The COSHPO consistently accepts and concurs upon projects wherein the analysis for heritage resources focuses on the APE identified by range and heritage personnel. These are areas where livestock congregation and high archaeological site probability overlap. The APE data is drawn from a summation of archival records, archaeological site visits, and class III heritage</p>

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	resource inventories conducted in 2008 and 2009. The COSHPO concurred with the development of the APE and with a finding of no adverse effect on July 30, 2010.
2-27	The formula used for calculating the grazing fee was established by Congress in the 1978 Public Rangelands Improvement Act, and has continued under a presidential Executive order issued in 1986. The Forest Service does not have the authority to manipulate the fee. More information about this subject can be found at: http://www.fs.fed.us/news/2010/releases/01/grazing.shtml
2-28	We were unable to locate any previous reference to PFC in your comments. The commenter is correct in stating that the “robust stream health” definition does not include a reference to PFC. Robust stream health is defined in the Watershed Conservation Practices Handbook as “Stream exhibits high geomorphic, hydrologic and/or biotic integrity relative to its natural potential condition (as represented by a suitable reference condition). For a quantitative analysis, high integrity is indicated by conditions that are 74 to 100% of a reference condition (after Plafkin et al. 1989; EPA 1999; CDPHE 2002). Physical, chemical and/or biologic conditions suggest that State assigned water quality (beneficial, designated or classified) uses are supported.” PFC is a methodology noted in the WCPH “Zero Code” as a tool for assessing riparian areas: “An interagency protocol developed to provide a consistent approach for considering hydrology, vegetation and erosion/deposition (soils) attributes and processes to assess the condition of riparian-wetland areas.” In the South Saguache analysis area, stream and riparian health was not only assessed using PFC methodology as the comment asserts, but was one of several techniques used. These methods are referenced in section 1.5.2 on pages 7 and 8 of the EA for comment: “Riparian areas and streams were evaluated using Proper Functioning Condition (PFC) surveys (BLM, 1993 and 1994), evaluation of sedge vegetation within the greenline and riparian characteristics evaluation (USDA-Forest Service 1996c), Multiple Indicator Monitoring (BLM, 2010), reference condition evaluations (FSH 2509.25) and Forest standard and guidelines (USDA-Forest Service, 1996a) throughout the analysis area.”
2-29	Livestock grazing on the RGNF is governed by both Forest Plan and project-level decisions. The National Forest Management Act (NFMA) and its associated implementing regulations require the Forest Service to integrate individual resource plans into the Forest Plan, including the grazing resource (36 CFR 219.20). The capability of National Forest System lands to producing forage and the suitability (or appropriateness) of allocating it to livestock were determined in the analysis for the Forest Plan. The site-specific suitability/capability analysis verified the pattern of suitable/capable acres as determined by the Forest Plan analysis. The pattern of suitable/capable acres as determined by the Forest Plan analysis was verified from past experience of the analysis area.
2-30	The project design criteria (PDC) were included for the purpose of designing a successful adaptive management alternative and addressing the identified key issues (chapter 1, section 1.9). Table 2.5-1 outlines the project design criteria for alternative 2 (current management) and alternative 3 (adaptive management) to provide clarity as to how the PDC would be different between the two alternatives. The flexibility afforded by utilizing adaptive management would allow greater ability to implement PDC proposed for alternative 3. Additionally, alternative 3 allows for additional PDC not currently proposed for alternative 3 that may be added or improved as needed in subsequent years. Many of these project design criteria would not apply to alternative 1 (no grazing) or alternative 2 (current management).
2-31	The EA for comment does not discuss riparian conditions as alleged. To the contrary, the EA states in section 3.6.3 that “The majority of the analysis area was found to have healthy watersheds and stream channels.” Forest Plan standards and guidelines, and proposed project design criteria included in the EA for comment in table 2.5-1, combined with the implementation monitoring in table 2.9-1, provide the “trigger” to deal with livestock impacts.
2-32a	The EA for comment fully analyzes 3 alternatives including the no grazing alternative (alternative 1) and two action alternatives, alternative 2 (current management) and alternative 3 (adaptive management). The quotation provided in the comment is not contained in the South Saguache EA for comment; therefore we are unable to respond to this allegation. Your opinion regarding the content of the EA for comment in general and the proposed action (adaptive management) are noted. However, the Forest Service disagrees with the commenter's negative assertions regarding implementation of the proposed action. Section

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	2.4.3 clearly discusses the advantages of adaptive management and section 2.6 provides specific management options for allotments in the South Saguache Analysis Area proposed in the EA under the alternative. These actions are a starting point and with monitoring input other management actions can and will occur to improve the stream, riparian, range, and overall watershed health.
2-32b	See comment response 2-26a.
2-33	See comment response 2-6. Appendix D provides a detailed monitoring schedule by allotment. This schedule includes proposed monitoring for all proposed benchmarks from table 1.5-3.
2-34	Management Area Prescription (MAP) 5.41 involves designated winter range for big game species, primarily Rocky Mountain elk and mule deer. Winter range was not noted as a primary potential limiting factor for big game species in the project area. However, riparian and early-seral habitat conditions on summer range are noted as a potential limiting factor for big game species on some allotments. The proposed action is expected to improve foraging conditions and overall habitat quality for big game species on both summer and winter range within the project area by limiting livestock use of riparian areas and encouraging better distribution in the uplands. There were no needs identified for additional management for big game species on MAP 5.41 areas.
2-35	The incomplete citation referred to from table 2.5-1 is proposed under alternative 3 (adaptive management). The South Saguache EA for comment is not an implementing document. In compliance with CEQs NEPA regulations (40CFR 1500-1508, sec. 1503.1) and 36 CFR 220, the Saguache EA for comment is the pre-decisional draft document released to invite public comment. Implementation of proposed design criteria will depend on the alternative selected in the final EA and subsequent decision notice.
2-36	See comment response 2-35.
2-37	See comment response 2-35.
2-38	Use of stubble height as an implementation monitoring technique is in compliance with the Rangeland Analysis and Management Training Guide (RAMTG) and is used in conjunction with the other approved annual monitoring techniques outlined in section 2.9.1 in the EA. Thank you for providing the three articles. Upon review of these, it is clear that each author agrees that there are many variables that affect the re-growth potential including site conditions, plant vigor, annual precipitation, plant community, elevation, and hydrology to name some that were mentioned. This is consistent with our experience on the RGNF and is reflected in the implementation monitoring schedule table 2.9-1 which includes multiple monitoring items to address this variability. In addition, the project design criteria (PDC) for allowable use are set at a conservative level recognizing that there will be years when re-growth does not occur. In these instances the combination of our allowable use criteria being conservative combined with the applied management and other PDC, such as deferment, is designed to address this natural variability.
2-39	<p>The EA for comment does not contain the alleged argument presented. The EA cites Knapp and Seastedt (1986) in section 3.4.4 as follows:</p> <p>“... grasses have evolved with the periodic removal of vegetative material through fire, insects, or ungulates. In the absence of grazing or other disturbance, plants continue to accumulate litter (dead grass blades left at the end of the growing season). After years of litter accumulation, plants go into a “self-imposed stress” whereby the detritus (previous years’ growth) chokes out new shoots competing for light (Knapp and Seastedt 1986).”</p> <p>We cannot comment on how the article relates to the Pike San Isabel National Forest. In the South Saguache EA this reference is used in relation to high productive systems, such as riparian areas, that are similar to tall grass prairie systems with regards to production. The ecological principles that are presented by Knap and Seastedt (1986) are appropriately extrapolated to similar systems. This type of extrapolation is common and is valid. For example, you provided three papers from Oregon, Idaho, and California that discuss regrowth. It is appropriate to extrapolate the ecological findings of these papers to similar systems, despite not being conducted on identical systems.</p>
3-1	The Forest Service acknowledges your commitment to land stewardship.
3-2	The Forest Service recognizes the many resources that are affected by cattle grazing. The

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	EA for Comment carefully analyzed for these resources under all three alternatives in chapter 3. This analysis will be fully considered by the responsible officer before selecting an alternative.
3-3	National Forest lands have many users and the Forest Service acknowledges the interactions that occur between these users and thanks you for your willingness to provide information to other Forest users.
3-4	The Forest Service recognizes your commitment as grazing permittees to working with the agency to adhere to regulations.
3-5	Your comment is noted.
4-1	The Forest Service acknowledges your commitment to land stewardship.
4-2	See response to comment 1-2b.
4-3	Your comment is noted.
4-4	Your comment is noted.
4-5	The Forest Service recognizes that the proposed improvements in the Poso and Moon Pass area may not be needed with current management of the allotment(s). However, due to the nature of the Forest Service permit system, management may change suddenly and having these systems available for development may be beneficial to future managers of the allotment(s). We will not develop these sources until a need is fully recognized.
4-6	The Forest Service recognizes that the proposed improvements in the Poso and Moon Pass area may not be needed with current management of the allotment(s). However, due to the nature of the Forest Service permit system, management may change suddenly and having these systems available for development may be beneficial to future managers of the allotment(s). We will not develop these sources until a need is fully recognized.
4-7	The Forest Service recognizes your commitment as a grazing permittee to working with the agency.

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Glossary

Allotment ~ A designated area of land available for livestock grazing.

Allotment, active ~ An established allotment that has a grazing permit (as defined under FSM 2200) currently issued to permit livestock grazing on that area. This also includes those situations where a permit has expired and the Forest Service is working on the issuance of a new permit (e.g., the transition period caused by permits expiring 12/31 and not getting the new permit issued for a few months).

Allotment, closed ~ An allotment that no longer has grazing permits issued, and where a decision has been made to close that allotment area to permitted livestock grazing.

Allotment, vacant ~ An allotment that does not have a grazing permit (under FSM 2200) issued to permit livestock grazing on that area.

Allotment management plan (AMP) ~ A document that specifies the program of action designated to reach a given set of objectives.

Allowable use ~ The degree of utilization considered desirable and attainable on various specific parts of an allotment considering the present resource condition, management objectives, and management level.

Analysis area ~ The area under study.

Animal unit (AU) ~ Considered to be one mature (1,000 pound) cow or the equivalent based on average daily forage consumption of 26 pounds dry matter per day.

Animal unit month (AUM) ~ The amount of feed or forage required by an animal unit for one month; not synonymous with head month.

Annual operating instructions (AOI) ~ A document that provides instructions from the Forest Service to the term permit holder (called a permittee) regarding management requirements, projects, agreements, and other information for the current grazing season.

Aquatic ecosystem ~ The stream channel; lake, or estuary bed, water, biotic communities, and the habitat features that occur therein.

Bed ground ~ An area where animals sleep and rest.

Benchmark ~ Representative sites that reflect the results of management actions in the shortest time frames.

Browse ~ The part(s) of shrubs, woody vines, and trees available for animal consumption.

Capable rangeland ~ Rangeland that is accessible and used by domestic livestock, has inherent forage producing capabilities, and can be grazed on a sustained yield basis without damage under reasonable management goals. Non-capable rangeland has no current grazing value for domestic livestock or should not be used for grazing because of physical or biological restrictions, or lacks improvements that would allow use.

Carr ~ A wetland willow thicket.

Class of livestock ~ Age and/or sex group of a kind of livestock.

Concern levels ~ A measure of the degree of public sensitivity to landscapes viewed from travelways and recreation use areas. Concern levels are divided into three categories as follows:

Level 1: (High) ~ Heavily used travelways and use areas where viewers have a high concern for the scenery in the surrounding landscapes.

Level 2: (Moderate) ~ Moderately used travelways and use areas where viewers have a moderate concern for the scenery in the surrounding landscapes.

Level 3: (Low) ~ Little used travelways or areas where there is little or no concern for the scenery in the surrounding landscapes.

Cover type ~ A taxonomic unit of vegetation classification referencing existing vegetation. Cover type is a broad taxon based on existing plant species that dominate, usually within the tallest layer.

Cumulative effects/impacts ~ The impacts or effects on the environment that result from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The time period of consideration for cumulative effects analysis is generally from the 1870s and continuing one decade into the future, unless stated otherwise in this document.

Death loss ~ The number of animals in a herd that die from various natural and accidental causes; usually expressed as a percentage.

Direct effects ~ Direct effects are those occurring at the same time and place as the triggering action.

Distance zones ~ Distance zones from the viewing platform (road, trail, use area, etc.); there are four categories of distance zones as follows:

Immediate foreground ~ 0' to 300'

Foreground ~ 300' to 1/4 mile.

Middleground ~ 1/4 mile to 4 miles.

Background ~ 4 miles to the horizon.

Ecological status ~ The degree of similarity between the existing vegetation (all components and their characteristics) and existing soil conditions compared to the potential natural community and the desired soil condition on a site.

Endangered species ~ A species that is in danger of extinction throughout all or a significant portion of its range.

Environmental justice ~ The fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.

Existing scenic integrity ~ An inventory that represents the status of the landscape and the degree to which it has been altered. This is a baseline measurement for scenic resources. The following is a list of the scenic integrity levels:

Type I (Natural Appearing Landscapes) ~ areas in which an ecological change has taken place except for trails needed for access. They appear untouched by human activities. This includes designated wilderness and backcountry areas.

Type II (Slightly Altered Appearing Landscapes) ~ areas where some human activity has occurred. Usually these areas can be described as near natural appearing or slightly altered as a result of human activity.

Type III (Altered Appearing) ~ areas where human modification has occurred and is obvious. Usually these areas can be described as altered (modified).

Type IV (Heavily Altered) ~ a viewshed or an area within a viewshed where 25 percent or greater is in a disturbed condition of modification, maximum modification, or unacceptable modification. It appears as a drastic change to the landscape in comparison to the characteristic landscape.

Forage ~ Browse and herbage that is available and may provide food for grazing animals or be harvested for feeding.

Forb ~ Any herbaceous plant other than those in the Poaceae (grass), Cyperaceae (sedge), and Juncaceae (rush) families.

Graminoid ~ Grasses (family Gramineae or Poaceae) and grasslike plants such as sedges (family Cyperaceae) and rushes (family Juncaceae).

Grass ~ A member of the Poaceae family.

Grass-like plant ~ A plant of the Cyperaceae (sedge) or Juncaceae (rush) families that vegetatively resemble a true grass of the Poaceae family.

Grazing permit ~ A document authorizing livestock to use National Forest System lands or other lands under Forest Service control for livestock production.

Greenline ~ The first perennial band of vegetation nearest the water's edge. Typically the first three-feet and considers primarily *Carex* species.

Habitat Structural Stage ~ A tree size and canopy closure classification for forested cover types and is defined as follows:

Structure Class	Habitat Structural Stage	Description
1	1 & 2	<i>Grass/Forb/Shrub/Seedling.</i> Stand dominance by grasses, forbs (broad-leaved herbaceous plants), shrubs and/or tree seedlings up to 1" DBH, 4.5 feet DBH for softwoods, and 2" DBH for hardwoods.
2	3a	<i>Sapling-Pole.</i> Stand dominance by trees in the majority of the 1–8.9" DBH size for softwoods and 2–8.9" DBH for hardwoods with a canopy closure of less than or equal to 40%.

3	3b & 3c	<i>Sapling-Pole</i> . Same as Structure Class 2 except canopy closure is 41–100%.
4	4a	<i>Mature</i> . Stand dominance by trees in the majority of the 9" or larger DBH size and tree age under 200 years for softwoods and under 100 years for hardwoods. Canopy closure is 40% or less.
5	4b, 4c, & 5	<i>Late-Successional Forest</i> . Two conditions are possible for meeting this category: a) Stand dominance by trees in the majority of the 9" or larger DBH size and tree age under 200 years for softwoods and under 100 years for hardwoods. Canopy closure is greater than 40%. b) Stand dominance by trees in the 5" DBH or greater size with a tree age over 200 years for softwoods and over 100 years for hardwoods. Tree crown cover is over 70 percent.

Head month ~ One month's use and occupancy of the range by one animal. For grazing fee purposes, it is a month's use and occupancy of range by one weaned or adult cow with or without calf, bull, steer, heifer, horse, burro, or mule, or five sheep or goats.

Herd ~ An assemblage of animals usually of the same species.

Herder ~ One who tends livestock on rangeland (usually applied to the person herding a band of sheep or goats).

Herding ~ The handling or tending of a herd.

Heritage resources ~ These consist of sites, features, and values having scientific, historical, educational, and/or cultural significance. They include concentrations of artifacts, structures, landscapes, or settings for prehistoric or historic events.

Heritage resource inventory ~ A systematic, on-the-ground search designed to identify the locations of heritage resources. Heritage resources identified in such inventories are recorded on State of Colorado cultural resource site forms which includes a determination of the significance of individual sites.

Increaser ~ A plant species native to a site (sometimes extended to include an intentionally introduced species) that will increase in relative amount, at least for a time, under heavy grazing.

Inherent scenic attractiveness ~ An inventory that refers to the level of diversity that a landscape has. There are three categories of attractiveness as follows:

Class A ~ (High) landforms are classified as distinctive.

Class B ~ (Typical) landforms are classified as common.

Class C ~ (Indistinctive) landforms are missing variety.

Indirect effects ~ Indirect effects are those occurring at a later time or distance from the triggering action.

Interdisciplinary team (ID Team) ~ A group of individuals from different resource backgrounds assembled to resolve issues or perform a task.

Irretrievable commitments of resources ~ These are losses that are in effect for a period of time. An example is a grazing allotment that is managed to remain in poor condition. The gap between its current condition and its potential productivity is an on-going irretrievable loss.

Irreversible commitments of resources ~ These are changes that cannot be reversed, except in the extreme long term. An example is when a species becomes extinct; this is an irreversible loss.

Key area ~ A portion of rangeland selected because of its location, grazing or browsing value, or use. It serves as a monitoring and evaluation point for range condition, trend, or degree of grazing use. Properly selected key areas reflect overall acceptability of current grazing management over the rangeland.

Krummholtz ~ Dwarf, timberline forest composed of Engelmann spruce.

KV funds ~ Funds derived from the sale of national forest timber authorized for use in reforestation and timber stand improvement work on areas cut by timber sales.

Landscape character ~ The overall visual and cultural impression of landscape attributes. The physical appearance and cultural context of a landscape that gives it an identity and a "sense of place". It includes existing land use patterns, ecological unit descriptions, and existing landscape character descriptions.

Landtype association (LTA) ~ An ecological mapping unit based on similarities in geology, soils, and plant associations. Repeatable patterns of soil complexes and plant communities are useful in delineating map units. LTAs are an appropriate ecological unit to use in Forest- or area-wide planning and watershed analysis. On the RGNF, soil mapping units were aggregated into 13 distinct LTAs.

Livestock use permit ~ A permit issued when the primary purpose of grazing use on National Forest System lands or lands controlled by the Forest Service for reasons other than livestock production.

Management area ~ An area that has common direction throughout that differs from neighboring areas. The entire forest is divided into management areas, with each area described, and policies and prescriptions relating to their use listed. Also called management-area prescription.

Management-ignited fire ~ Obsolete term; see *Prescribed fire*.

Mass movement hazard ~ The assessment of risk of landmass failure or slumping.

Pastoralist ~ A social and economic system based on the raising and herding of livestock.

Permitted livestock ~ Livestock presently being grazed under a permit or those that were grazed under a permit during the preceding season, including their offspring retained for herd replacement.

Permittee ~ Any entity that has been issued a grazing permit.

Permitted use ~ The number of animals, period of use, and location of use specified in part 1 of the grazing permit (see also definition for authorized use).

Plant association ~ A potential natural plant community of definite floristic composition and uniform appearance, represented by stands occurring in places with similar environments.

Plant community ~ An assemblage of plants living and interacting together in a specific location. No particular ecological status is inferred. Plant communities may include exotic or cultivated species.

Prescribed fire ~ Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met, prior to ignition. Formerly called *management-ignited fire*.

Prescribed natural fire ~ Obsolete term; see *Wildland fire use*.

Present net value ~ An economics term which considers the present value of the cash inflows less the present value of the cash outflows (it considers the time value of money).

Proposed species ~ A species that has been officially proposed by the USFWS for listing.

Recreation opportunity spectrum (ROS) ~ This is an inventory process that results in an allocation that identifies a variety of recreation experiences which are categorized by classes. Each class is defined in terms of: (1) the degree to which it satisfies certain recreation needs, (2) the extent to which the natural environment has been modified, (3) the type of facilities provided, (4) the degree of outdoor skills needed, and (5) the relative density of recreation use. The recreation classes associated with this process include the following:

Primitive (P) ~ Extremely high probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance in an environment that offers a high degree of challenge and risk. On the RGNF, the Primitive ROS category was further subdivided for wilderness into the following subcategories:

Wilderness-Pristine (PRS) ~ Human influence on vegetation is minimal. These areas are managed for solitude; visitors are expected to use primitive skills often, in an environment which offers a high degree of risk and challenge. Success or failure is directly dependent on the ability, knowledge, and initiative of the visitor. Contact with other users or Forest Service wilderness personnel is infrequent. Encounters with large groups are rare, and infrequent with small groups or individuals. There is no lasting evidence of commercial activities; these areas are used primarily as pass-through travel zones for commercial groups. There is no lasting evidence of camping activity or human impacts on wilderness conditions. An element of discovery is maintained. There are not interpretive signs, markers, or posts, just historical cairns. Evidence of cultural and historic sites may exist, but is not signed. Structures or facilities may be present only as necessary for resource protection, when less obtrusive measures have been unsuccessful. Constructed trails are absent. User created trails or game trails may exist, but are not maintained or designated on maps or trail guides. Travel is primarily cross-country. Livestock grazing is appropriate and authorized and past mining activity may be evident but rare.

Wilderness-Primitive (PRM) ~ Human influence on physical features such as soils and geologic materials is unnoticeable in most areas. These areas are managed for a primitive and unconfined recreation experience, with a high degree of solitude. There is little contact with individuals or groups when traveling cross-country. When on trails,

encounters with large groups are infrequent, with some encounters with small groups or individuals. Campsites are dispersed, with minimal sight and sound effects from adjacent campsites. There is evidence of established campsites. Established commercial base camps may exist. Permits for day-use activities are limited for high-use areas. There are signs at trail intersections to indicated trail routes, but no destination signs or mileage markers. Management information and administrative signs are used when necessary for resource protection. Evidence of cultural and historic sites may exist, but is not interpreted on the ground. Structures and facilities exist for resource protection and administration of the wilderness. Trail systems are maintained to minimize damage or loss of the trail tread. Cross-country travel occurs. User-established trails are evident. Bridges may be present, when needed for user protection or user safety. Livestock grazing is appropriate and authorized.

Wilderness-Semi-Primitive (SPRM) ~ Human influence on vegetation is minimal. Contact with other users or Forest Service wilderness personnel is frequent. Encounters with large and small groups are likely. Campsites are limited and may be designated. There is evidence of established campsites. Sites may be visible or audible from adjacent sites. There are no established commercial base camps. Permits for day-use activities are limited to high-use areas. These areas are primarily used as pass-through travel zones for commercial groups. There are signs at the trail intersections to indicate trail routes. Boundary signs, trailhead signs, and other information are appropriate to educate and inform wilderness users. Evidence of cultural and historic sites may exist, but is not interpreted on the ground. There are structures and facilities for resource protection and administration of wilderness. Travel is primarily along trails. Trail systems are predominantly maintained. Bridges may be present when needed for resource protection, or where no safe opportunity exists to cross a stream during periods of normal water flow. Livestock grazing is appropriate and authorized.

Semi-Primitive Non-Motorized (SPNM) ~ High, but not extremely high, probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance in an environment that offers a high degree of challenge and risk.

Semi-Primitive Motorized (SPM) ~ Moderate probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance in an environment that offers challenge and risk. Opportunity to have a high degree of interaction with the natural environment and use motorized equipment while in the area.

Roaded Natural (RN) ~ Equal probability to experience affiliation with other user groups and for isolation from sights and sounds of human. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive type of recreation are not important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible. *Modified roaded* means the same.

Rural (R) ~ Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are generally unimportant except for

specific activities like downhill skiing, for which challenge and risk-taking are important elements.

Urban (U) ~ Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. Experiencing natural environments, having challenges and risks afforded by the natural environment, and the use of outdoor skills are relatively unimportant. Opportunities for competitive sports and for passive uses of highly human-influenced parks and open spaces are common.

Recreation visitor day (RVD) ~ Twelve visitor hours, which may be aggregated continuously, intermittently, or simultaneously, by one or more persons.

Reference condition ~ The set of selected measurements and/or conditions used as representative of the natural potential condition of a stream. The selected measurements and/or conditions describe a minimally impaired watershed or reach characteristic of a stream type in an ecoregion. Minimally impaired sites are those with the least anthropogenic influences and represent the best range of conditions that can be achieved by similar streams within an ecoregion. A reference stream would be one that exhibits this best range of conditions for a particular stream type and physiographic setting.

Reference stream ~ These streams represent the least-impacted streams of a particular stream type within a physiographic area. They exhibit the best range of stream conditions available today, both physical and vegetative, that a particular stream type can achieve when minimally impacted.

Riparian area ~ Geographically delineable area with distinctive resource values and characteristics that are comprised of the aquatic and riparian ecosystems.

Riparian ecosystem ~ A transition between the aquatic ecosystem and the adjacent terrestrial ecosystem; identified by soil characteristics or distinctive vegetation communities that require free or unbound water.

Rosgen stream classification ~ A widely-used method for classifying streams and rivers based on common patterns of channel morphology as follows:

Aa+ = Very steep, deeply entrenched, debris transport, torrent streams.

A = Steep, entrenched, cascading, step/pools streams. High energy/debris transport associated with depositional soils. Very stable if bedrock or boulder dominated channel.

B = Moderate entrenched, moderate gradient, riffle dominated channel with infrequently spaced pools. Very stable plan and profile. Stable banks.

C = Low gradient, meandering, point-bar, riffle/pool, alluvial channels with broad, well defined floodplains.

D = Braided channel with longitudinal and transverse bars. Very wide channel with eroding banks.

DA = Anastomosing (multiple-channels) narrow and deep with excessive, well vegetated floodplains and associated wetlands. Very gentle relief with highly variable sinuities and width/depth ratios. Very stable streambanks.

E = Low gradient, meandering riffle/pool stream with low width/depth ratio and little deposition. Very efficient and stable. High meander width ratio.

F = Entrenched meandering riffle/pool channel on low gradients with high width/depth ratio.

G = Entrenched “gully” step/pool and low width/depth ratio on moderate gradients.

Salting ~ Providing salt as a mineral supplement for animals. Placing salt on the rangeland in such a manner as to improve distribution of livestock.

Scenic integrity objectives ~ The result of an inventory process that measures how much human alteration can deviate from the existing landscape character being viewed. Scenic integrity objectives include the following:

Very high ~ (Preservation) refers to landscapes where the valued landscape character is intact with only minute, if any, deviations.

High ~ (Retention) refers to landscapes where the valued landscape character appears intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident.

Moderate ~ (Partial Retention) refers to landscapes where the valued landscape character appears slightly altered. Noticeable deviations must remain visually subordinate to the landscape character being viewed.

Low ~ (Modification) refers to landscapes where the valued landscape character appears moderately altered but they borrow valued attributes such as size, shape, edge effect, and pattern of natural openings, vegetative type changes or architectural styles in the surrounding landscapes.

Very low ~ (Maximum Modification) refers to landscapes where the valued landscape character appears heavily altered but may not borrow from valued attributes such as size, shape, edge effect, and pattern of natural openings, vegetative type changes or architectural styles within or outside the surrounding landscapes.

Scoping ~ Contact/discussion with the public, internally, and with agencies and tribal governments over a proposed action to determine the scope of issues to be addressed.

Secondary range ~ Secondary range is that part of the range which is suitable for livestock use, but is used very little or not at all because of accessibility, lack of water, management system, or combination of these. Livestock use is normally minimal or nonexistent until the primary range has reached or exceeded allowable use levels.

Sensitive species ~ A species that is not presently listed as threatened or endangered by the USFWS, but a population viability concern has been identified as evidenced by: (1) significant current or predicted downward trends in population numbers or density, and/or (2) significant current or predicted downward trends in habitat capability that may reduce a species' existing distribution.

Seral community ~ Any community that is not at potential. A relatively transitory community that develops under ecological succession, toward, or away from a potential natural community.

Seral stage ~ Successional plant communities are often classified into quantitative seral stages to depict the relative position on a classical successional pathway.

Sixth-level watersheds ~ Basins can be delineated on a broad scale or be broken down into several or many “subwatersheds”. A standardized national watershed boundary dataset, developed by the USGS in the 1970s, subdivides watershed areas into sub-basin areas of 250,000 acres or more (average size 450,000 acres). This dataset is commonly known as the fourth level or 8-digit HUCs (Hydrologic Unit Catalog), in reference to the standardized, 8-digit numerical identifiers associated with each delineated sub-basin. For many applications, these 8-digit watershed subdivisions are too coarse or cover too large of an area (450,000 acre average). Therefore, standardized watershed delineation databases that further subdivide “fourth level” basins into smaller watershed areas (levels fifth and sixth; 10 and 12 coding digits) have been developed. Sixth-level watersheds normally range from 10,000 to 40,000 acres in size.

Stock driveway ~ A strip of land specifically designated for the controlled movement of livestock.

Stocking density ~ The relationship between number of animals and area of land at any instant of time. It is typically expressed as animals per acre.

Soil compaction ~ Soil that has a 15 percent increase in bulk density over natural undisturbed conditions.

Soil erosion hazard ~ A rating of a soil's potential to erode.

Soil health ~ An assessment of soil physical, biological, and chemical conditions related to growing plants (forests and grasslands) over the long term.

Soil productivity significant changes ~ Based on current research, a 15 percent reduction in productivity is allowed, and serves as an early warning system of reduced productive capacity.

Soil standards ~ A requirement that no more than 15 percent (area extent) of an activity area may be compacted, eroded, displaced, puddled, or severely burned. In addition, in order to maintain soil fertility, organic matter must be maintained on soils with little organic matter reserves.

Stream health ~ The condition of a stream versus reference conditions for the stream type and geology, using metrics such as channel geometry, large woody debris, substrate, bank stability, flow regime, water chemistry and aquatic biota (FSH 2509.25).

Structure class ~ A classification of forested cover types which aggregates Habitat Structural Stage into broader categories. Each category is defined in the table shown under Habitat Structural Stage.

Succession ~ The process of vegetative and ecological development whereby an area becomes successively occupied by different plant communities.

Suitable rangeland ~ Areas where grazing is appropriate considering economics, environmental consequences of livestock grazing, rangeland conditions, and the other uses or values of an area.

Threatened species ~ A species that is in danger of extinction throughout all or a significant portion of its range.

Trailing ~ Controlled directional movement of livestock.

Transitory rangeland ~ This is suitable range which comes into being as a result of partial or complete removal of forest cover by logging, fire, insects, or disease for which the management objective is to reestablish the tree cover as soon as possible. These areas may be grazed so long as soil is not damaged and the grazing remains compatible with requirements and use of other resources.

Travel management ~ Providing for safe, environmentally responsible and customer-responsive movement of vehicles and people to and through Forest lands.

Unauthorized livestock ~ Any cattle, sheep, goat, hog, or equine not defined as a wild free-roaming horse or burro by 36 CFR §222.20(b)(13), which is not authorized by permit (or Bill for Collection) to be upon the land on which the livestock is located and which is not related to use authorized by a grazing permit (livestock owned by other than a National Forest grazing permit holder). Noncommercial pack and saddle stock used by recreationists, travelers, other forest visitors for occasional trips, as well as livestock to be trailed over an established driveway when there is no overnight stop on Forest Service administered land do not fall under this definition.

Water influence zone (WIZ) ~ The land next to water bodies where vegetation plays a major role in sustaining long-term integrity of aquatic systems. It includes the geomorphic floodplain, riparian ecosystem, and inner gorge. Its minimum horizontal width (from top of each bank) is 100 feet or the mean height of mature dominant vegetation, whichever is most.

Watershed condition ~ Watershed condition is assessed by calculating the acreage of all surface disturbances that have occurred over time within each watershed area. Acreages for each kind of disturbance are adjusted to get an equivalent roaded area and then added together to get an accumulated total disturbed area. Watershed disturbance is compared to concern levels established in the Forest Plan to determine whether cumulative watershed disturbances are likely to pose a threat to watershed health.

Wildfire ~ An unplanned, unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

Wildland fire ~ Any non-structure fire, that occurs in the wildland. Three distinct types of wildland fire have been defined and include wildfire, wildland fire use, and prescribed fire.

Wildland fire use (WFU) ~ The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined designated areas outlined in fire management plans and accomplished under the confines of a wildland fire implementation plan (WFIP). Formerly called *Prescribed natural fire*.

Universal transverse mercator (UTM) ~ A coordinate system that is a grid-based method of specifying locations on the surface of the Earth.

Appendix A: Summary of Upland and Riparian Monitoring Sites Evaluated by Allotment

Table A-1. Summary of upland monitoring sites evaluated using cover-frequency sampling by allotment

Name-Location	Condition-trend
California Gulch Allotment	
C1-Hat Springs	Satisfactory-upward
C2-West Park	Satisfactory-upward
Carnero Allotment	
C1-Mann Creek	Satisfactory-upward
C2-Sunnyside Park	Satisfactory-upward
C3-Fullerton Park	Satisfactory-upward
C4-Cyclone Park	Satisfactory-upward
C5-Royal Park	Satisfactory-upward
Cave Allotment	
C1-Coolbroth	Satisfactory-upward
C2-Poso Creek	Satisfactory-upward
C3-Cave Creek	Satisfactory-upward
C4-Upper Cave Creek	Satisfactory-upward
Cottonwood Allotment	
C1-Little Cottonwood	Satisfactory-upward
C2-Sanderson	Satisfactory-upward
C3-Biedell	Satisfactory-upward
Houselog Allotment	
C1-Browns Park	Satisfactory-upward
C2-Upper Browns Park	Satisfactory-upward
C3-Upper South Park	Satisfactory-upward
C4-Lower Spring Gulch	Satisfactory-downward
C5-Lower South Park	Satisfactory-upward
C6-Big Dry	Satisfactory-downward
C7-Upper Spring Gulch	Satisfactory-downward
C9-Houselog	Satisfactory-upward
Mill Creek Allotment	
C1-Lower Paradise Park	Satisfactory-static
C2-West Mill Creek	Satisfactory-upward
C3-Laughlin Gulch	Satisfactory-upward
C4-Mill Creek	Satisfactory-upward
Pasture Allotment	
C1-Moon Pass	Satisfactory-upward
C2-Deer Creek	Satisfactory-upward
SanJuan Maez Allotment	
C1-San Juan Creek	Satisfactory-upward

C2-North Fork Carnero	Satisfactory-upward
C3-Sheep Camp	Unsatisfactory-upward
Sawlog Allotment	
C1-Poision Gulch	Satisfactory-upward
C2-Sawlog Creek	Satisfactory-upward
C3-Upper Dry Gulch	Satisfactory-upward
Tracy Canyon Allotment	
C1-North Tracy	Satisfactory-upward

Table A-2. Summary by allotment of riparian sites evaluated

Location-Monitoring Conducted	Condition-trend ¹
California Gulch Allotment	
Allen Creek-Proper Functioning Condition(PFC):1	Non-functional-not apparent
Hat Springs-Reference Conditions	Robust/at-risk (width)
Moon Creek-Reference Conditions	Robust
Upper Grouse Creek-Reference Conditions	Robust
California Gulch-Reference Conditions	Robust/at-risk (width/sediment)
Carnero Allotment	
North/Middle Fork Carnero Creek-PFC:1	Proper functioning/functional at risk-upward
Upper pasture Middle Fork Carnero Creek -PFC:2	Proper functioning/functional at risk-upward
Middle/Lower pasture Middle Fork Carnero Creek-PFC:3	Proper functioning-upward
Upper pasture Middle Fork Carnero Creek-Multiple Indicator Monitoring (MIMs)	Robust/at-risk (width/sediment)
Cave Allotment	
South Fork Carnero-Reference Conditions	Robust-local road sediment impact
Poso Creek-Reference Conditions	Robust
Cave Creek-Reference Conditions	Robust-local road sediment impact
Prong Creek-Reference Conditions	Robust
Houselog Allotment	
Upper Houselog-Reference Conditions	Good
Spring Gulch-Reference Conditions	Robust
Big Spring-Reference Conditions	Robust
Mill Creek Allotment	
Lower Mill Creek-PFC1	Proper functioning-upward
Upper Mill Creek- PFC2	Functional at risk-not apparent
Lower Mill Creek-MIMS	No trend established-baseline data collection
Mill Creek-Reference Conditions	Robust/at-risk (width/sediment)
Pasture Allotment	
South Fork Carnero Creek-Reference Conditions	Robust
Deer Creek-Reference Conditions	Robust
SanJuan Maez Allotment	
San Juan Creek-Reference Conditions	Robust/at risk (width/sediment in lower reach)
North Rork Carnero Creek-Reference Conditions	Robust
Sawlog Allotment	
North Fork Carnero Creek-Reference Conditions	Robust

Poison Gulch-Reference Conditions	Robust
Sawlog Creek-Reference Conditions	Robust
Dry Gulch-Reference Conditions	Robust
<i>Tracy Canyon Allotment</i>	
North Tracy-Reference Conditions	Robust
South Tracy-Reference Conditions	Robust

¹Trend not available for all monitoring conducted.

Appendix B: Maps of Proposed Key Areas, Benchmarks, and Long-term Transects By Allotment

Maps 1 and 2 appear in Chapter 1. See the following pages for maps 3 through 10.

Map 3. California Gulch C&H Allotment proposed key area, benchmark, and long-term transect locations

Map 4. Carnero C&H Allotment proposed key area, benchmark, and long-term transect locations

Map 5. Cave and Pasture C&H allotments proposed key area, benchmark, and long-term transect locations

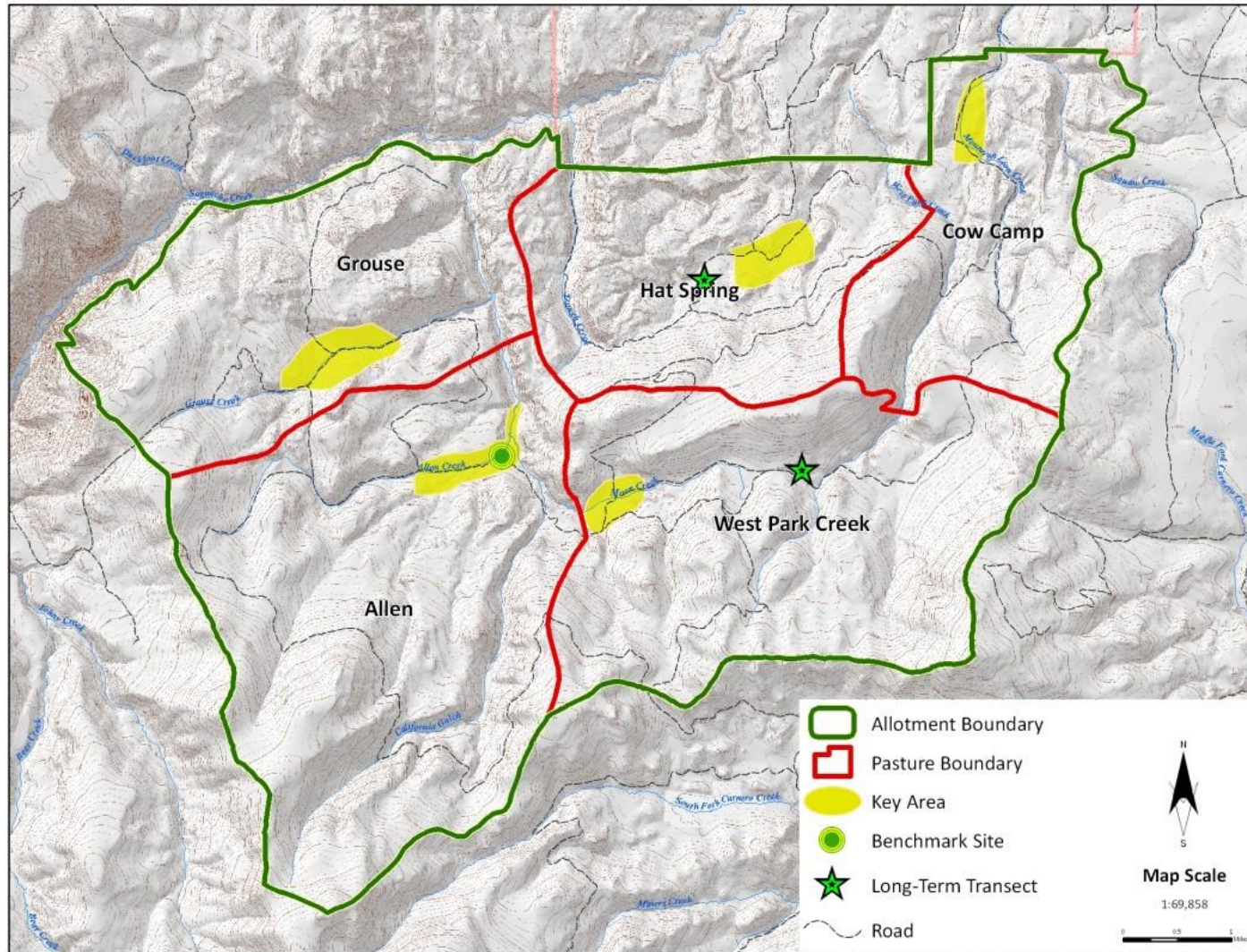
Map 6. Cottonwood and Sawlog C&H allotments proposed key area, benchmark, and long-term transect locations

Map 7. Houselog C&H Allotment proposed key area, benchmark, and long-term transect locations

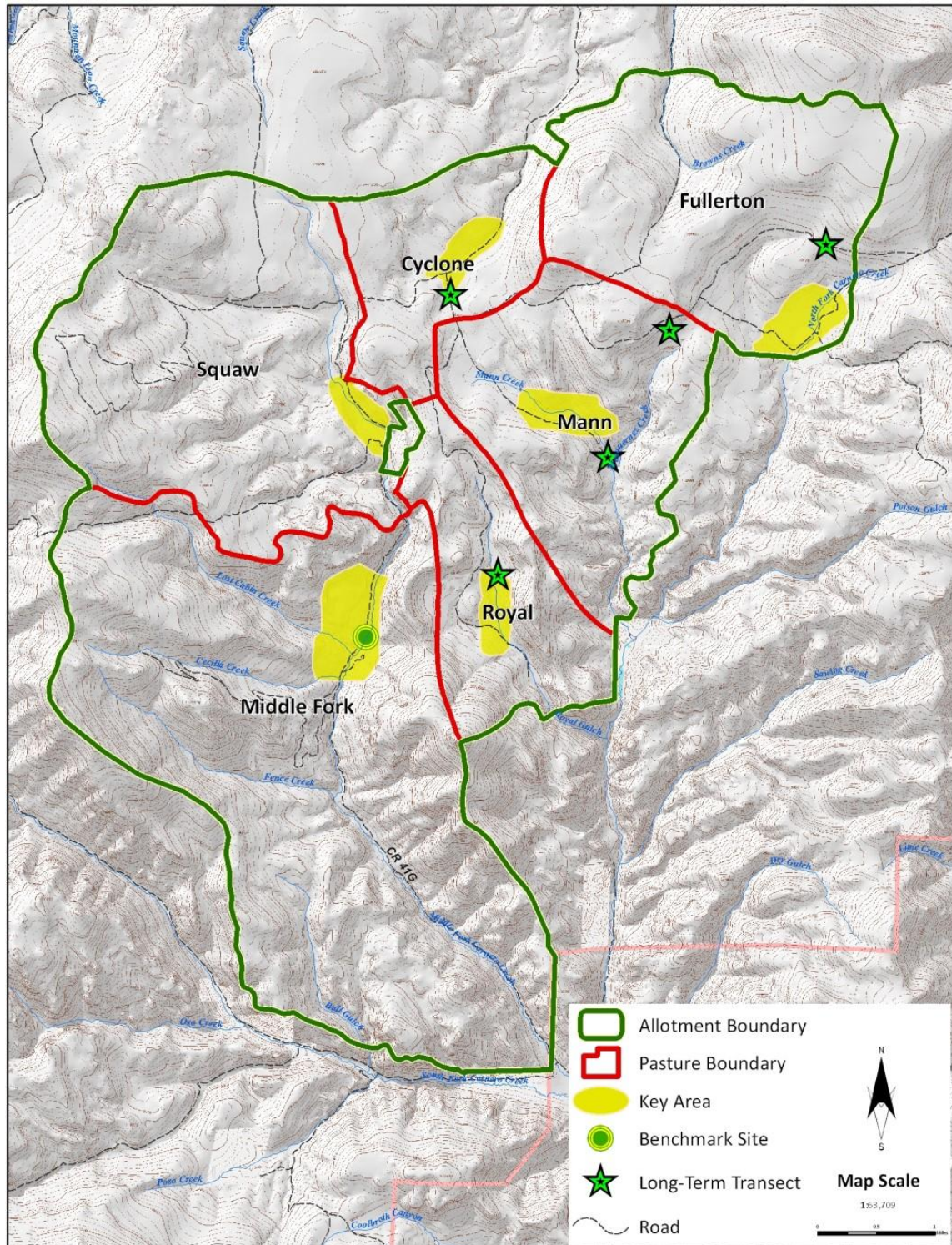
Map 8. Mill Creek C&H Allotment proposed key area, benchmark, and long-term transect locations

Map 9. San Juan Maez C&H Allotment proposed key area, benchmark, and long-term transect locations

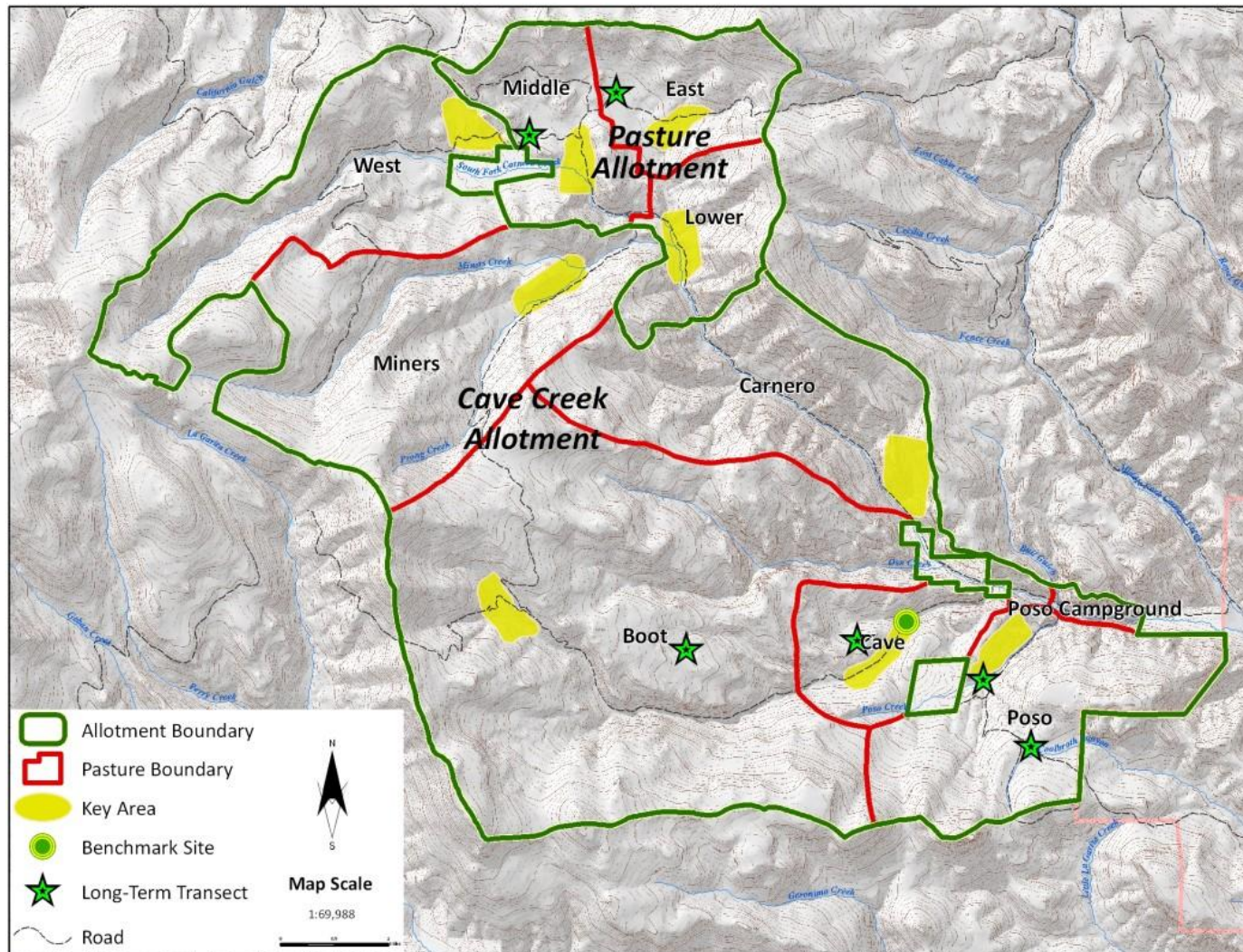
Map 10. Tracy Canyon C&H Allotment proposed key area, benchmark, and long-term transect locations



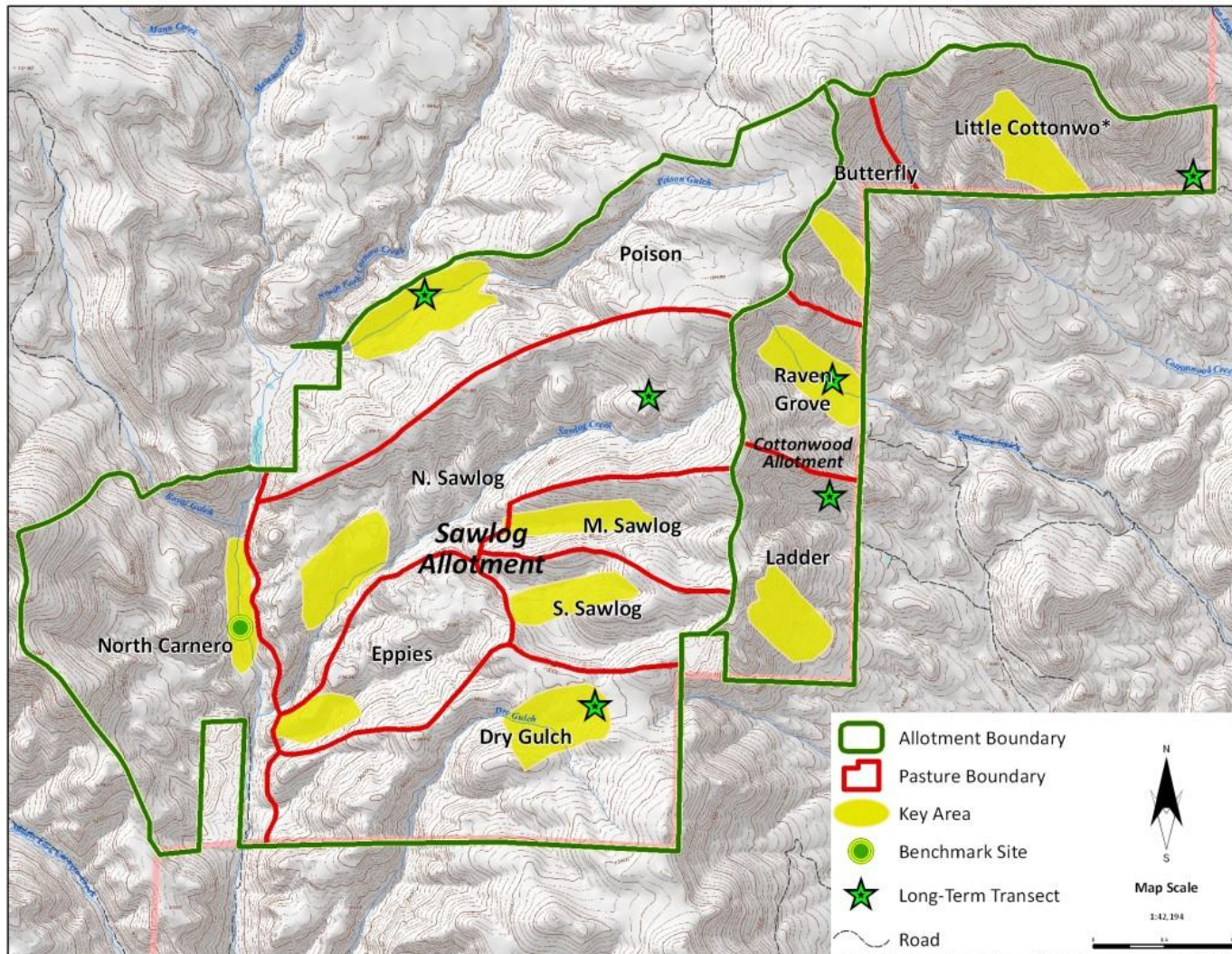
Map 3. California Gulch C&H Allotment proposed key area, benchmark, and long-term transect locations



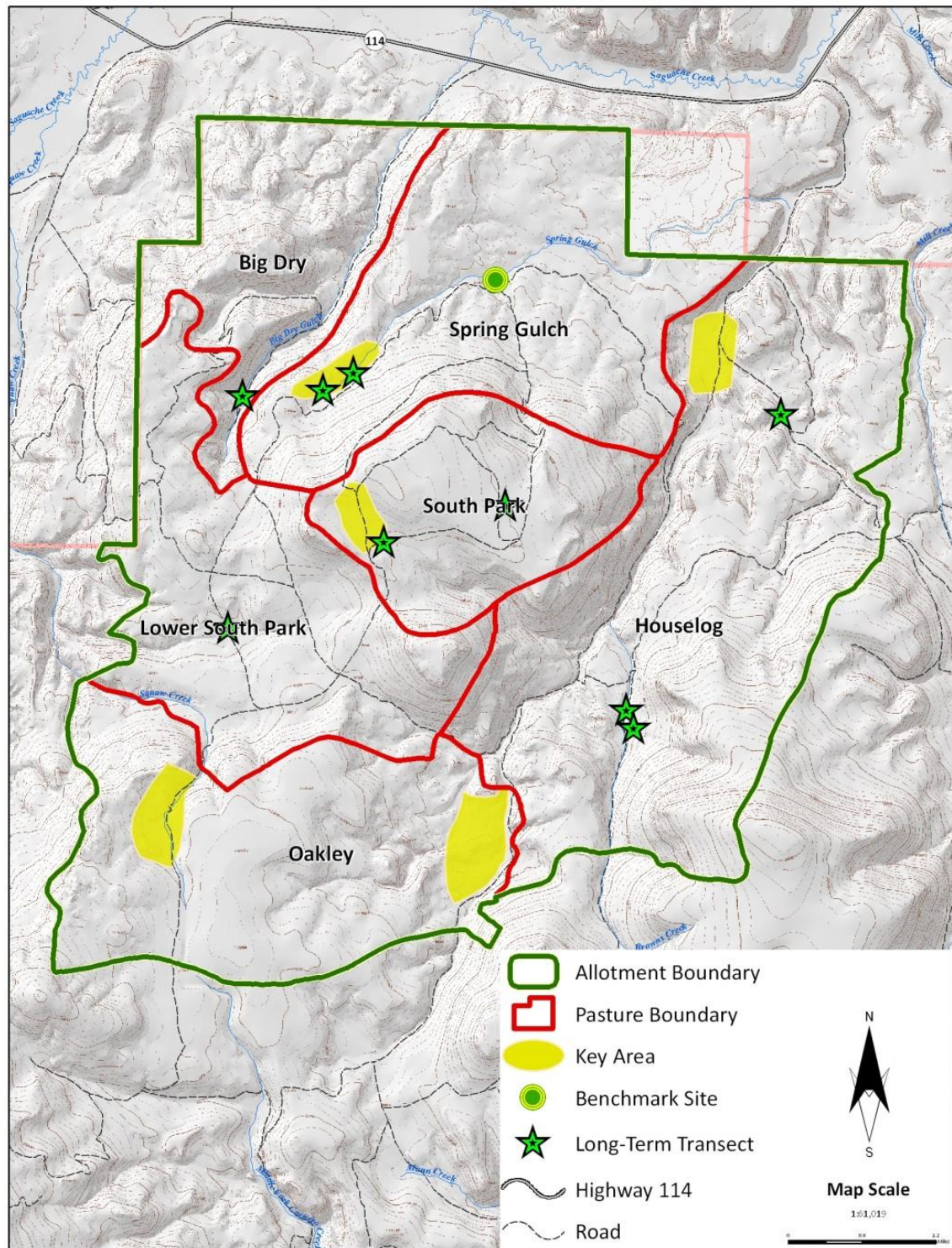
Map 4. Carnero C&H Allotment proposed key area, benchmark, and long-term transect locations



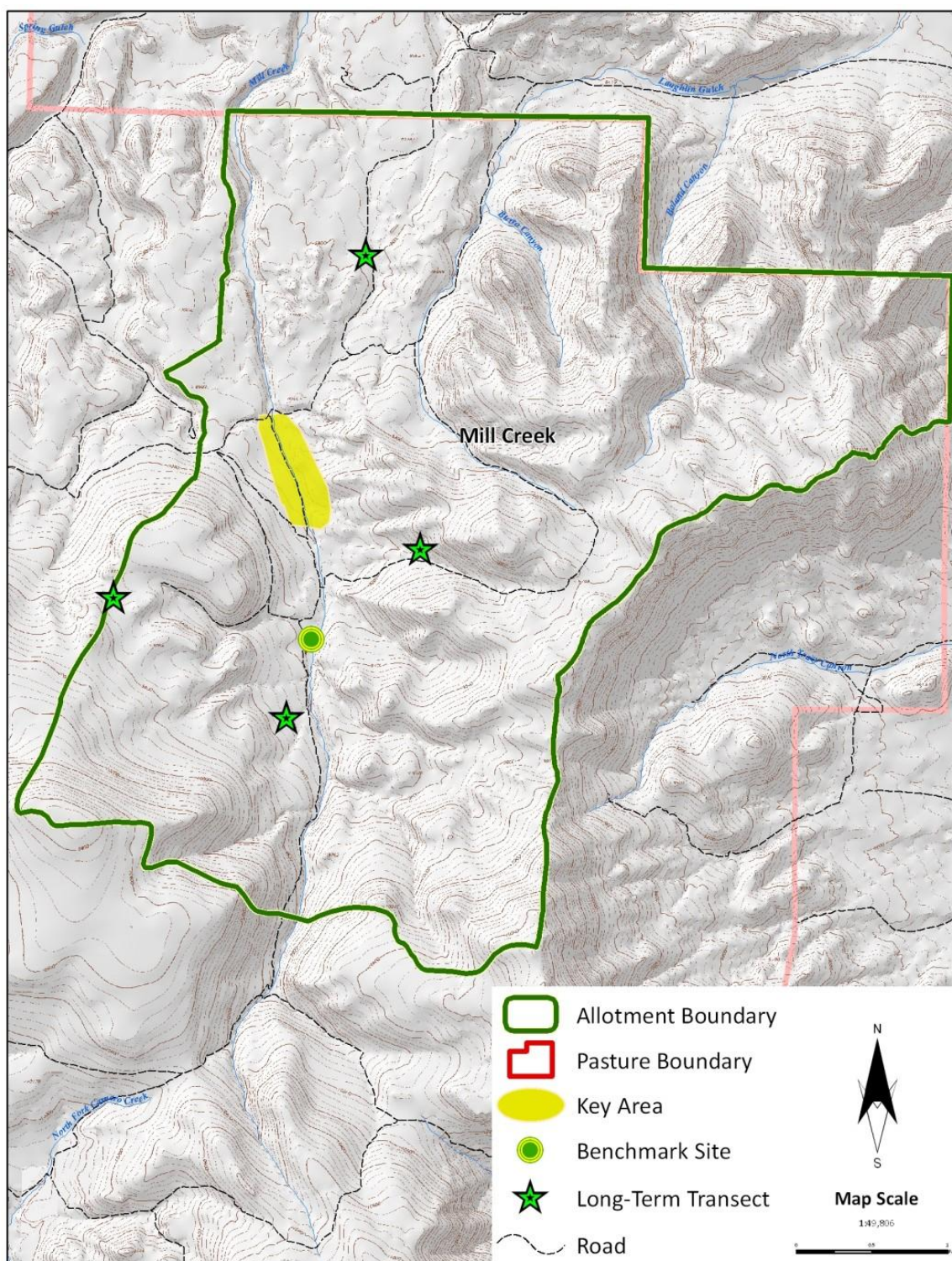
Map 5. Cave and Pasture C&H allotments proposed key area, benchmark, and long-term transect locations



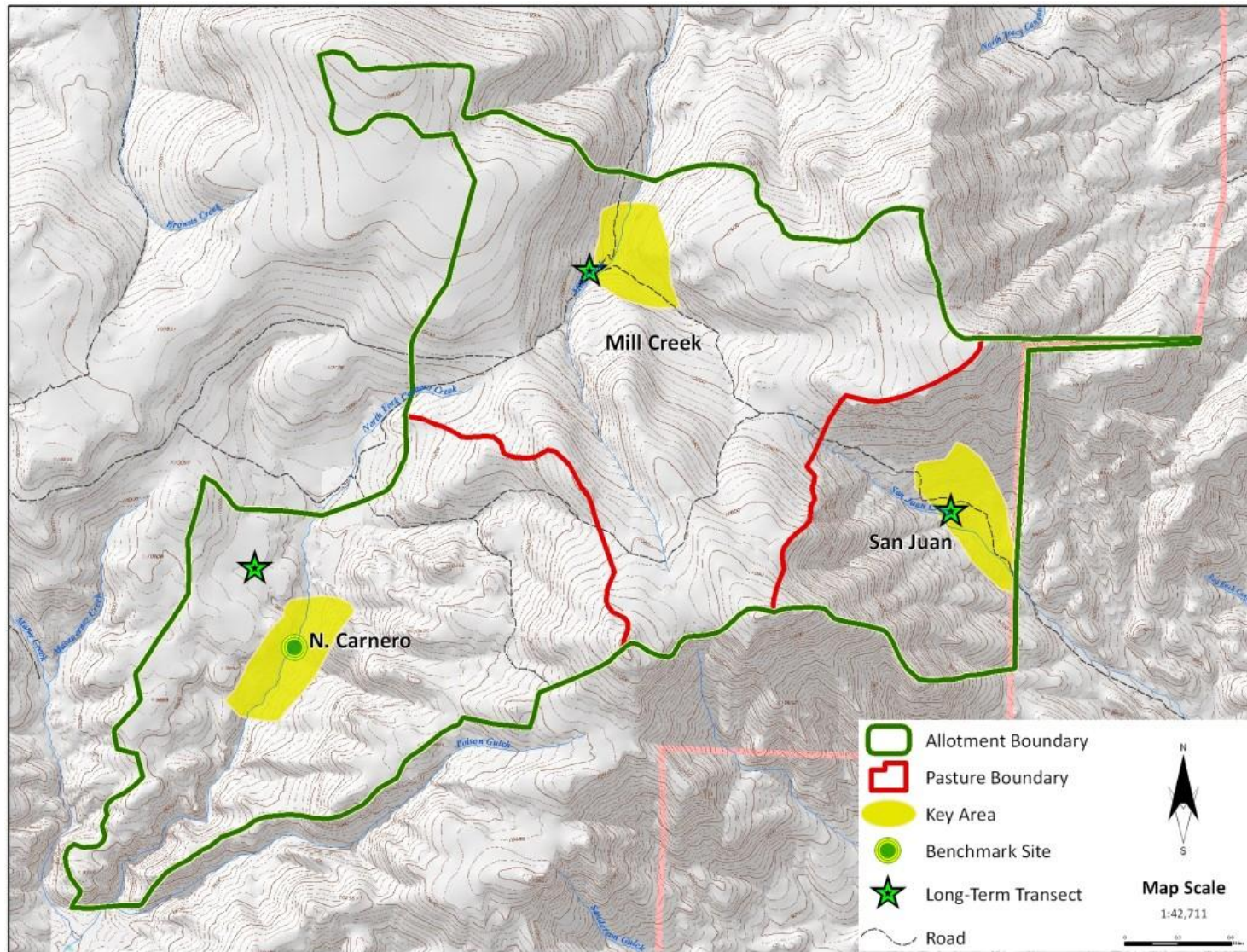
Map 6. Cottonwood and Sawlog C&H allotments proposed key area, benchmark, and long-term transect locations

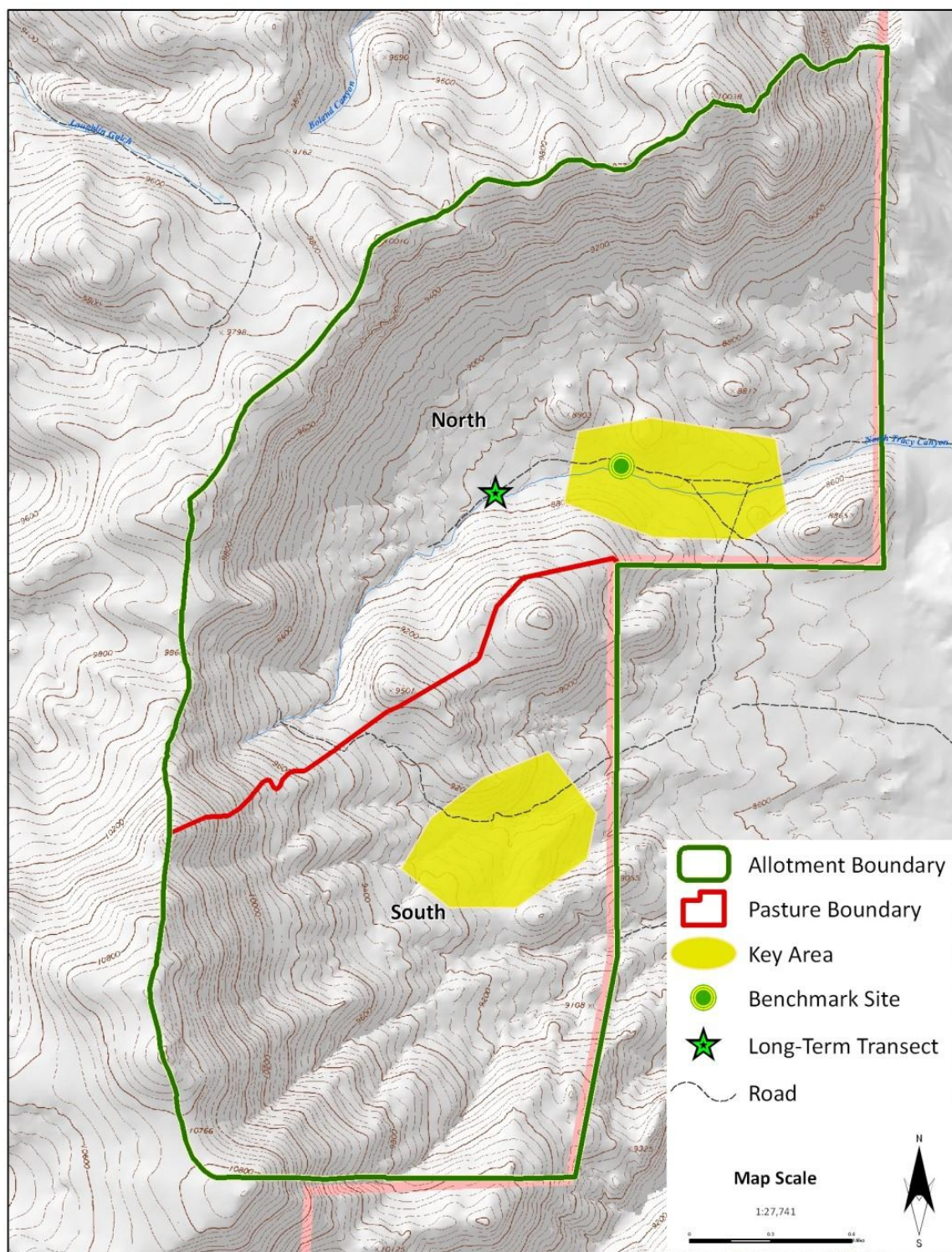


Map 7. Houselog C&H Allotment proposed key area, benchmark, and long-term transect locations



Map 8. Mill Creek C&H Allotment proposed key area, benchmark, and long-term transect locations





Map 10. Tracy Canyon C&H Allotment proposed key area, benchmark, and long-term transect locations

Appendix C: Descriptions and Maps of Proposed Improvements by Allotment

Maps 1 and 2 appear in Chapter 1. Maps 3-10 appear in Appendix B. See the following pages for maps 11 through 19.

Map 11. California Gulch C&H Allotment proposed improvement locations.

Map 12. Carnero C&H Allotment proposed improvement locations.

Map 13. Cave C&H Allotment proposed improvement locations.

Map 14. Cottonwood C&H Allotment proposed improvement locations.

Map 15. Houselog C&H Allotment proposed improvement locations.

Map 16. Mill Creek C&H Allotment proposed improvement locations.

Map 17. San Juan Maez C&H Allotment proposed improvement locations.

Map 18. Sawlog C&H Allotment proposed improvement locations.

Map 19. Tracy Canyon C&H Allotment proposed improvement locations.

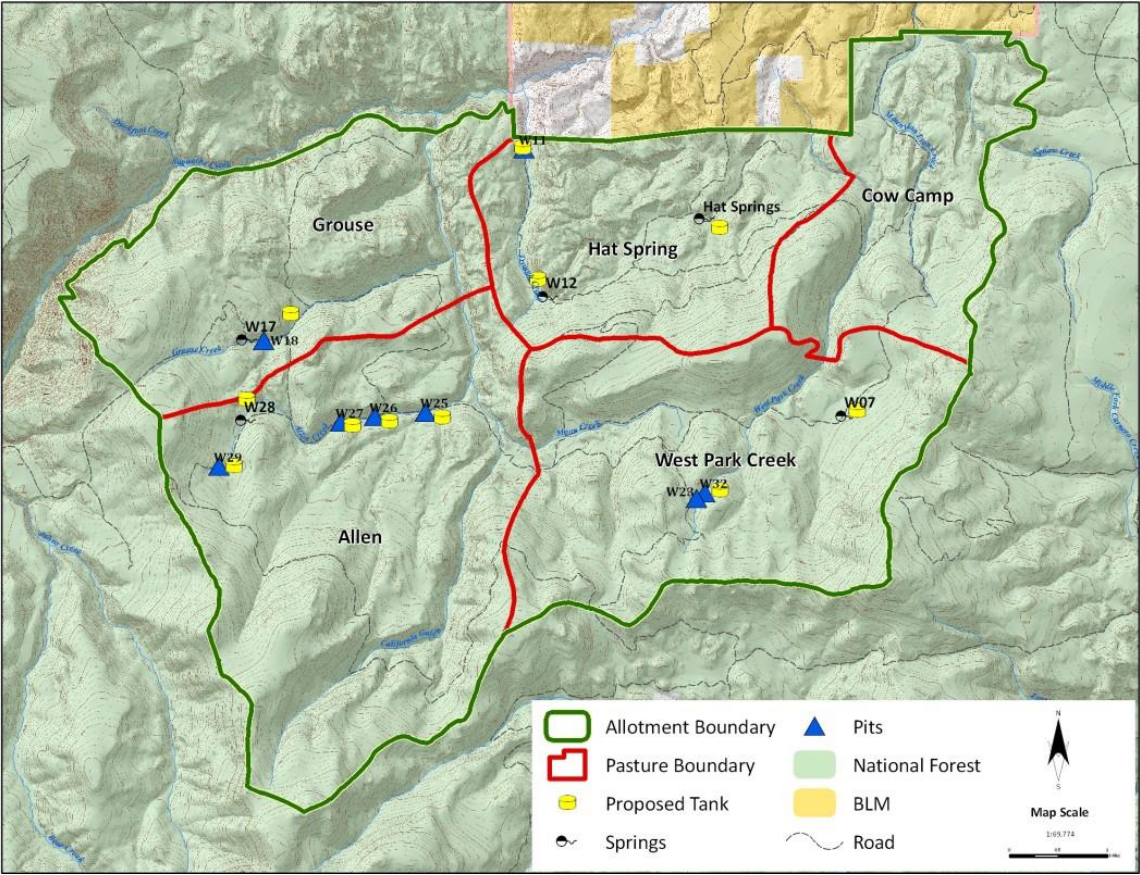
California Gulch C&H Allotment Proposed Improvements

Proposed improvement options for the California Gulch Allotment include:

- In the Hat Springs Pasture, develop a pipeline along contour from existing spring development W12-Upper Trough Spring (T44N, R4E, Section 28, NESW¹/₄) approximately ½ mile to a stock tank.
- In the Hat Springs Pasture, develop a pipeline along contour from the existing Hat Spring approximately ½ mile to a stock tank (T44N, R4E, Section 23 NESW¹/₄).
- In the Grouse Pasture, move existing stock tanks on improvement W17-Upper Grouse Creek Spring (T44N, R3E, Section 36 SESW¹/₄) to locations that will minimize resource impacts.
- In the Allen Pasture, develop a pipeline along contour from existing spring development W28-Eight Ball Spring (T43N, R3E, Section 1 NESW¹/₄) approximately 400 yards to a stock tank(s). The improvement will provide water for both the Allen and Grouse pastures. This may require two tanks or the creation of a water trap.
- Relocate tanks located in riparian areas or near areas of concern while minimizing distance and ground disturbance.

Many of the existing improvements constructed in the 1960s were developed as earthen stock pits. Many of these pits need to be redeveloped and in instances where the sources may be impacted, piped to a stock tank to protect the source. A site-specific evaluation will be conducted to determine where development will be most effective and minimize resource impacts. It is therefore unlikely that all the existing pits will be redeveloped. The existing improvements include the following:

- W07-West Park Creek Spring (T44N, R4E, Section 36 SESW¹/₄)
- W11-Lower Trough Gulch Spring (T44N, R4E, Section 21 NWNW¹/₄)
- W18-Grouse Creek Trail Spring (T44N, R3E, Section 36 SESW¹/₄)
- W23-Upper West Creek Spring (T43N, R4E, Section 3 SESE¹/₄)
- W25-Allen Creek Reservoir 1 (T44N, R4E, Section 31 SWSW¹/₄)
- W26- Allen Creek Reservoir 2 (T44N, R4E, Section 31 SESW¹/₄)
- W27-Allen Creek Reservoir 3 (T43N, R3E, Section 6 NWNW¹/₄)
- W29-Allen Creek Spring (T43N R3E Section 12 NWNW ¹/₄)
- W32-Cow elk spring (T43N, R4E, Section 3 NESE¹/₄)



Map 11. California Gulch C&H Allotment proposed improvement locations

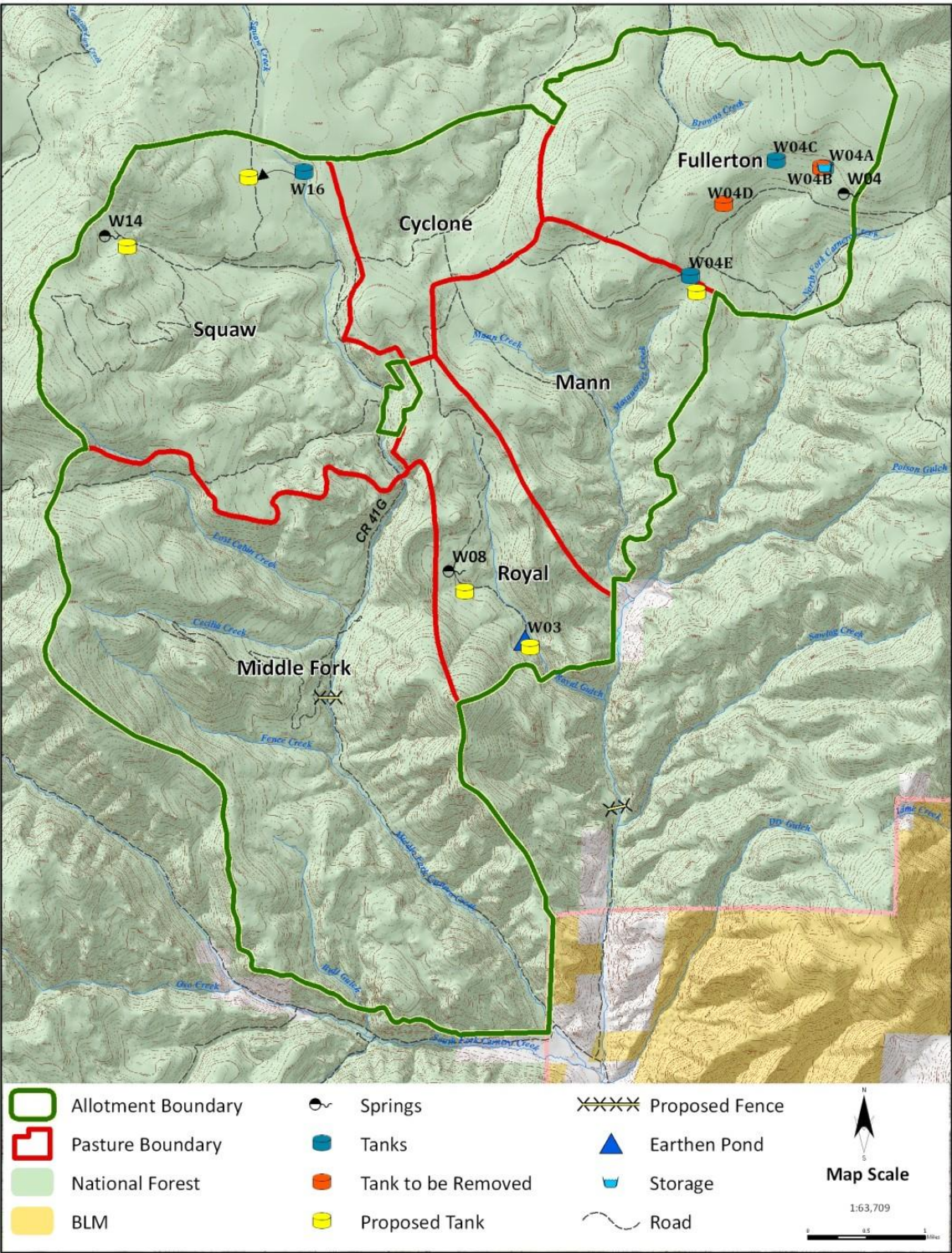
Carnero Allotment Proposed Improvements

Proposed fence improvement options for the Carnero Allotment include:

- Construction of approximately 1 mile of permanent fence at (T43N, R5E, Section 28 NE $\frac{1}{4}$) extending from the existing cattle guard on road 41G (appendix C) to create an additional pasture in the Middle Fork Pasture.

Proposed water improvement options for the Carnero Allotment include:

- In the Royal Pasture, develop a pipeline along contour from existing earthen pond W03-Royal Creek (T43N, R5E, Section 22 NESE $\frac{1}{4}$) approximately 400 yards to a stock tank if feasible.
- In the Royal Pasture, develop a pipeline along contour from existing developed spring W08-Royal spring approximately $\frac{1}{2}$ mile to a stock tank.
- In the Squaw Pasture, develop a pipeline along contour from existing spring development W14-Squaw Spring (T43N, R5E, Section 6 NENW $\frac{1}{4}$) approximately 400 yards to a stock tank.
- In the Squaw Pasture, move existing stock tank on improvement W16-Long Park Spring (T44N, R5E, Section 32 NESE $\frac{1}{4}$) away from the drainage to a location that will minimize resource impacts.
- In the Fullerton Pasture, reconstruct the existing Fullerton line water system (T44N, R6E, Section 31 NWSW $\frac{1}{4}$). The system was constructed in 1981 and consists of two spring sources and six tanks, but has limited function due to construction flaws. This line is critical to provide upland water sources. The number of tanks on the line will decrease to four and the location of the line will be within 1,000 yards of the existing line. A water storage facility (i.e., bladder bag or a lined pond) may be placed at the same location as the previous storage facility (grain bin) depending on available water recharge rates. The last tank on the line will be developed to provide water for both the Fullerton and Mann pastures. This may require two tanks or the creation of a water trap.
- In the event that the Fullerton line water system cannot be developed to provide adequate water, a well may be drilled in the Fullerton or Mann pasture. The location of the well would be dependent on surveys, but would be at a location that would provide water to both the Mann and Fullerton pastures. Existing tank locations would be used whenever possible.

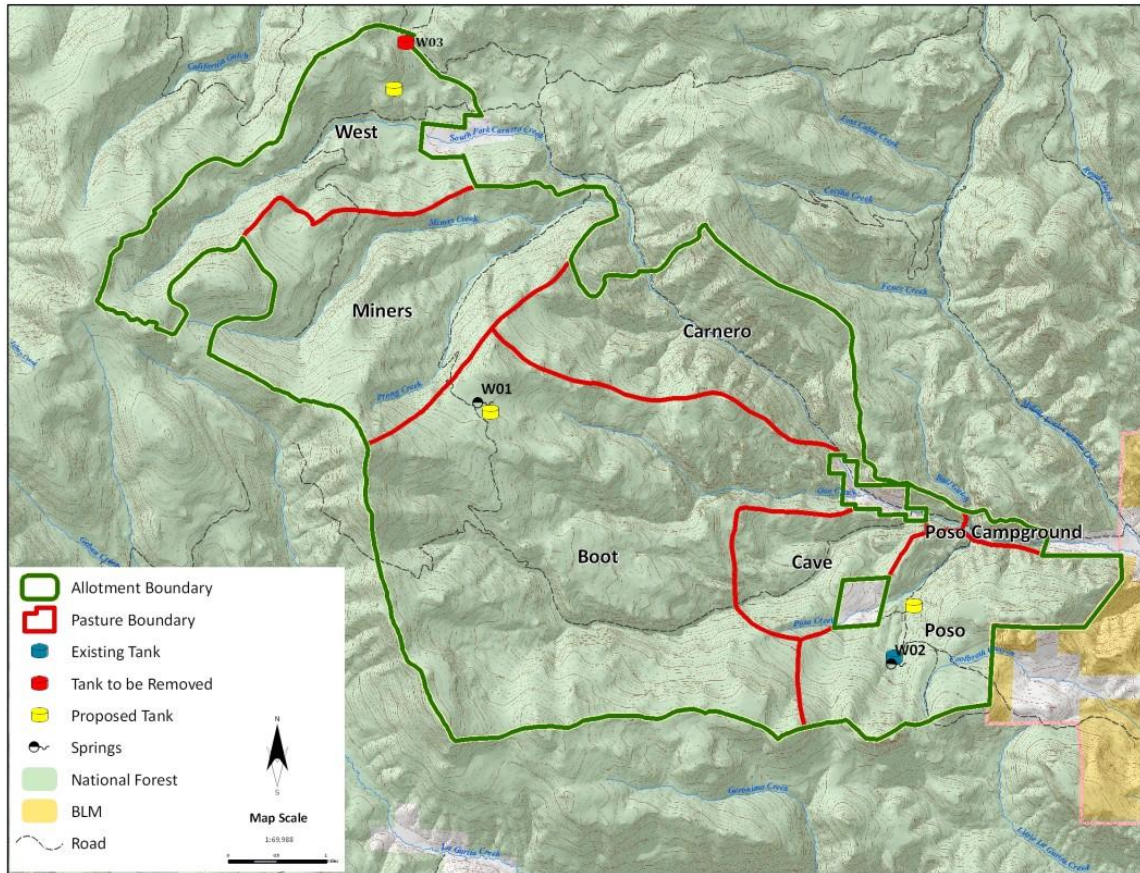


Map 12. Carnero C&H Allotment proposed improvement locations

Cave C&H Allotment Proposed Improvement

Proposed improvement options for the Cave Allotment include:

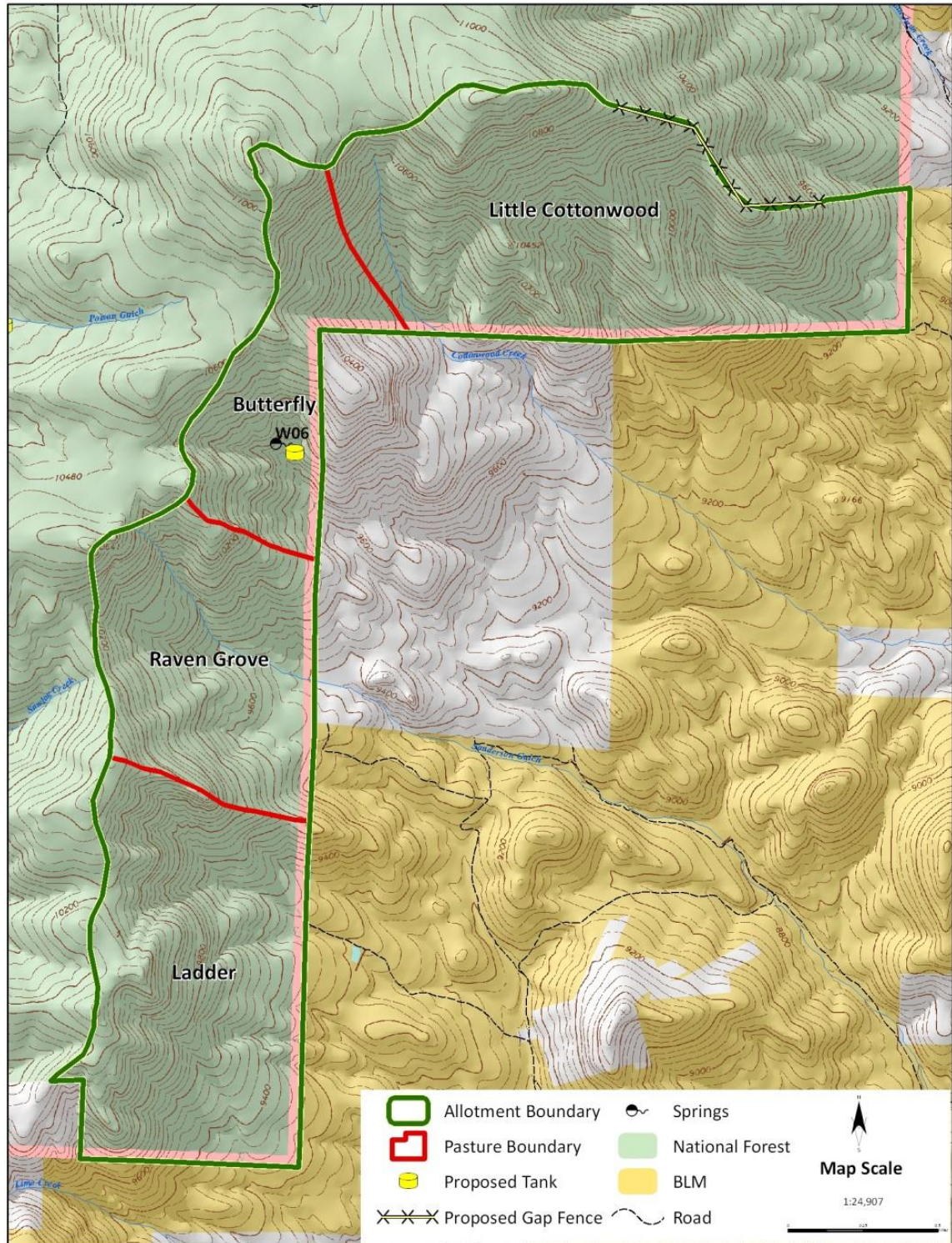
- In the Poso Pasture, develop a pipeline along contour from existing stock tank W02-Poso Creek Spring (T42N, R5E, Section 17 SENE $\frac{1}{4}$) approximately $\frac{1}{2}$ mile to a stock tank.
- In the Boot Pasture, develop a pipeline along contour from existing developed spring W01-Sawmill Spring (T43N, R4E, Section 34 NWSE $\frac{1}{4}$) approximately 200 yards to a stock tank.
- In the West Pasture, remove existing Moon Pass stock tank W03 and relocate approximately $\frac{1}{2}$ mile from current location (T43N, R4E, Section 9 SWSW $\frac{1}{4}$).



Cottonwood C&H Allotment Proposed Improvements

Proposed improvement options for the Cottonwood Allotment include:

- In the Butterfly Pasture, develop a pipeline along contour from existing spring development W06-Curley Spring (T43N, R6E, Section 17 NESE approximately 400 yards to a stock tank.
- The existing boundary fence needs to be extended to prevent cattle movements.



Map 14. Cottonwood C&H Allotment proposed improvement locations

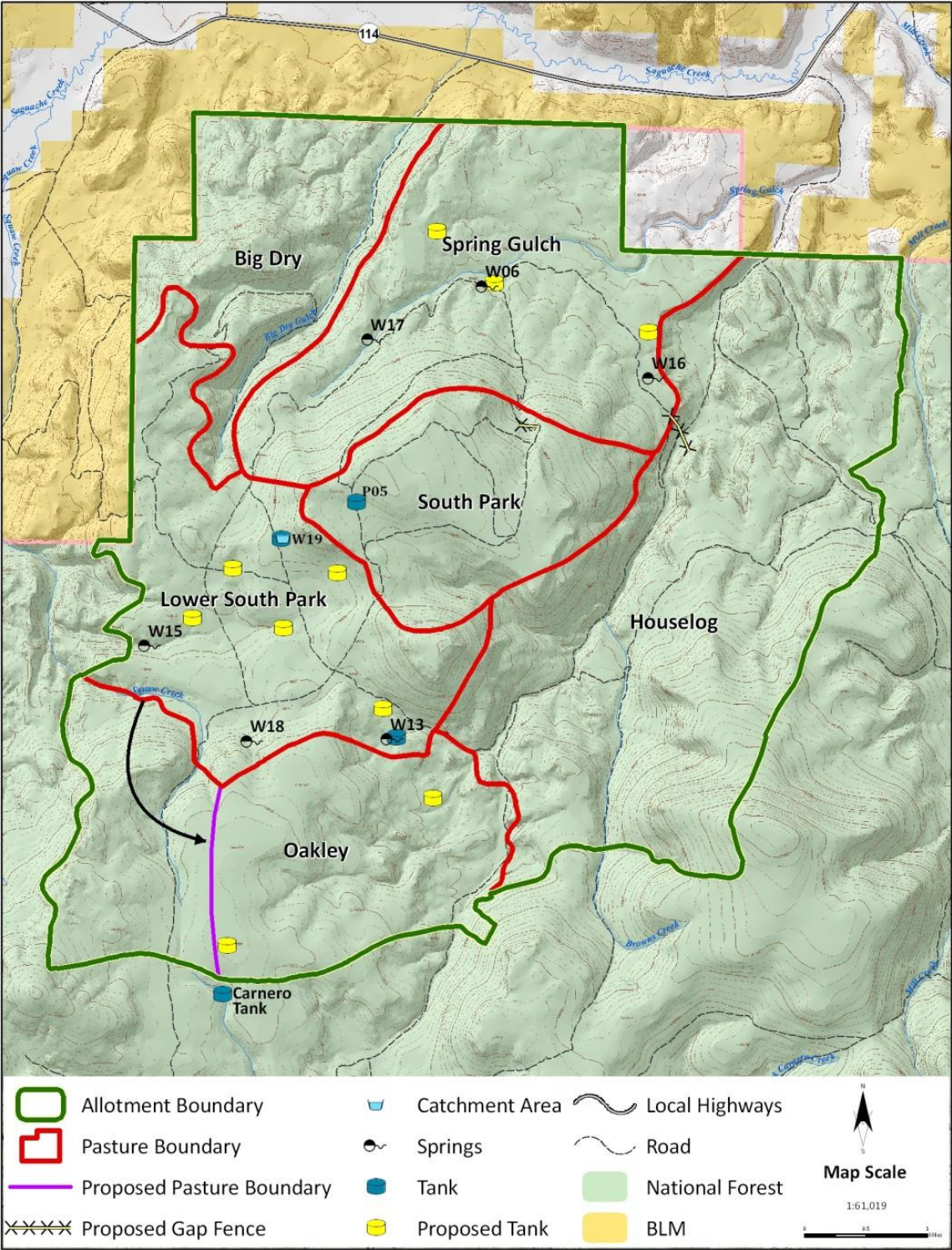
Houselog C&H Allotment Proposed Improvements

Proposed fencing improvement options for the Houselog Allotment include:

- In the South Park Pasture, a gap fence at FSR707 (T44N, R5E, Section 11 NWNW $\frac{1}{4}$)
- In the South Park Pasture, a gap fence at FSR707 (T44N, R5E, Section 3 SWSE $\frac{1}{4}$)
- Adjust the boundary between the Lower South Park Pasture and the Oakley Pasture to include Long Park with the Lower South Park Pasture.

Proposed water improvement options for the Houselog Allotment include:

- In the Spring Gulch Pasture, develop a pipeline along contour from existing spring development W16-John Spring (T44N, R5E, Section 1 NESW $\frac{1}{4}$) approximately $\frac{1}{2}$ mile to a stock tank(s).
- In the Spring Gulch Pasture, develop a pipeline along contour from existing spring development W06-Spring Gulch Spring (T44N, R5E, Section 3 NENE $\frac{1}{4}$) approximately 200 yards to a stock tank.
- In the Spring Gulch Pasture, develop a pipeline along contour from existing spring development W17- Spring Gulch Spring (T44N, R5E, Section 4 NESE $\frac{1}{4}$) approximately 1 mile to a stock tank(s).
- In the Oakley Pasture, extend the pipeline feeding an existing tank on the Carnero Allotment approximately $\frac{1}{2}$ mile to place a stock tank in Long Park (T44N, R5E, Section 32 SWNE $\frac{1}{4}$).
- In the Oakley Pasture, extend the pipeline from an existing tank W13A in the Lower South Park Pasture approximately $\frac{1}{2}$ mile to a new stock tank (T44N, R5E, Section SESW $\frac{1}{4}$).
- In Lower South Park Pasture, move the existing tank on spring development W13-Oakley Spring (T44N, R5E, Section 22 NWSW $\frac{1}{4}$) out of the riparian area.
- In Lower South Park Pasture, develop a pipeline along contour from existing spring development W18-Calvin Spring (T44N, R5E, Section 21 NWSW $\frac{1}{4}$) approximately 1 mile to a stock tank(s).
- In Lower South Park Pasture, develop a pipeline along contour from existing spring development W15-Squaw Creek Spring (T44N, R5E, Section 17 SWSW $\frac{1}{4}$) approximately $\frac{1}{2}$ mile to a stock tank.
- In Lower South Park Pasture, existing catchment development W19 (T44N, R5E, Section 09 SESW $\frac{1}{4}$) has a buried grain bin for a collection basin. Replace this bin a lined pond similar to one located in the upper south park pasture.
- In Lower South Park Pasture, develop a pipeline along contour from existing catchment development W19-Rain Trap (T44N, R5E, Section 10 NESW $\frac{1}{4}$) approximately 1 mile to a stock tank.
- In the South Park Pasture, extend the pipeline from an existing tank P05 in the South Park pasture approximately $\frac{1}{2}$ mile to a new stock tank (T44N, R5E, Section 16 SWNW $\frac{1}{4}$).



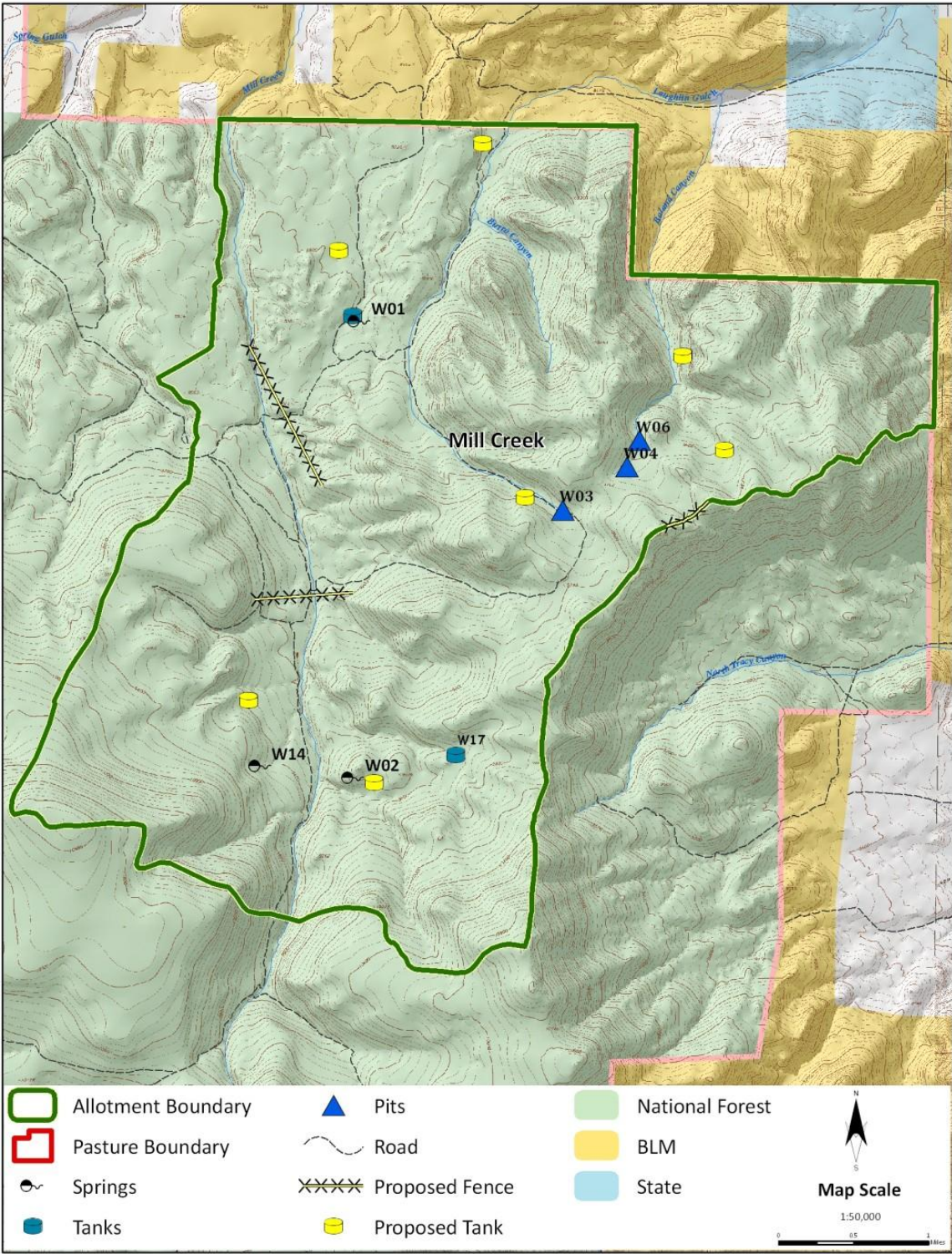
Mill Creek C&H Allotment Proposed Improvements

Proposed fencing improvement options for the Mill Creek Allotment include:

- A permanent fence approximately 1 mile long (T44N, R6E, Sections 20 & 21)
- A permanent fence approximately 1 mile long (T44N, R6E, Sections 8 & 17)

Proposed water improvement options for the Mill Creek Allotment include:

- Line (bentinite or synthetic) and fence the existing pit W03-Laughlin Gulch Reservoir (T44N, R6E, Section 15 NESW $\frac{1}{4}$) and pipe approximately 200 yards to a stock tank.
- Develop a pipeline along contour from existing spring development W04-Boland Spring (T44N, R6E, Section 15 NWNW $\frac{1}{4}$) approximately 1 mile to a stock tank(s).
- Develop a pipeline along contour from existing spring development W06-West Boland Spring (T44N, R6E, Section 15 SENE $\frac{1}{4}$) approximately 1 mile to a stock tank(s).
- Develop a pipeline along contour from existing spring/tank W01-Laughlin Gulch Spring (T44N, R6E, Section 8 SENE $\frac{1}{4}$) approximately $\frac{3}{4}$ mile to a stock tank.
- Develop a pipeline along contour from existing spring development W02-Saddle Spring (T44N, R6E, Section 28 SWNW $\frac{1}{4}$) approximately $\frac{1}{4}$ mile to a stock tank.
- Develop a pipeline along contour from existing spring development W14-Mill Creek Spring (T44N, R6E, Section 30 SENE $\frac{1}{4}$) approximately $\frac{1}{2}$ mile to a stock tank.
- Expand the collection area for existing improvement W17-Tracy Canyon Parks (T44N, R6E, Section 28 NENE $\frac{1}{4}$).
- Place a stock tank(s) to be used for storing hauled water (T44N, R6E, Section 4 NENE $\frac{1}{4}$).

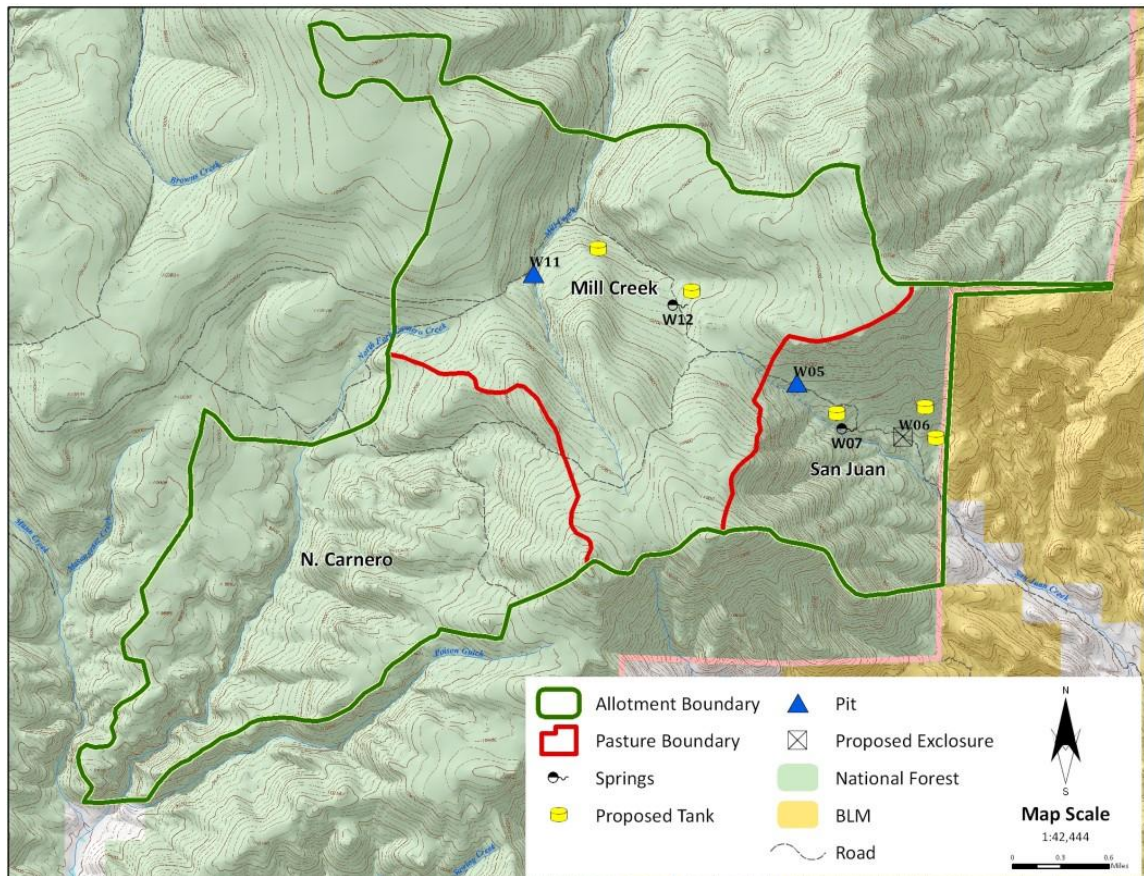


Map 16. Mill Creek C&H Allotment proposed improvement locations

San Juan Maez C&H Allotment Proposed Improvements

Proposed water improvement options for the San Juan Maez Allotment include:

- In the San Juan Pasture, connect the existing pit W05-San Juan 1 to the existing spring W07-Seep Stock Pond (T43N, R6E, Section 4 SWSE $\frac{1}{4}$) approximately $\frac{1}{2}$ mile to obtain an additional water source to improve recharge rate and reliable function.
- In the San Juan Pasture, move the current tank location that is fed from the existing spring W07-Seep Stock Pond (T43N, R6E, Section 4 SWSE $\frac{1}{4}$) approximately $\frac{1}{2}$ mile to obtain additional drop in elevation.
- In the San Juan Pasture, develop a pipeline along contour from existing unnamed spring development (T43N, R6E, Section SESE $\frac{1}{4}$) approximately $\frac{1}{4}$ mile to a stock tank.
- In the San Juan Pasture, retire existing pit W06-San Juan 2 and fence the spring and wetland area around the source.
- In the Mill Creek Pasture, develop a pipeline along contour from existing stock pit W11-Upper Mill Creek (T44N, R6E, Section 32 SWSW $\frac{1}{4}$) approximately $\frac{1}{2}$ mile to a stock tank.
- In the Mill Creek Pasture, relocate existing stock tank W12A-Mill Park approximately 200 yards from current location (T43N, R6E, Section 33 SWSW $\frac{1}{4}$).



Map 17. San Juan Maez C&H Allotment proposed improvement locations

Sawlog Allotment Proposed Improvements

Proposed fence improvement options for the Sawlog Allotment include:

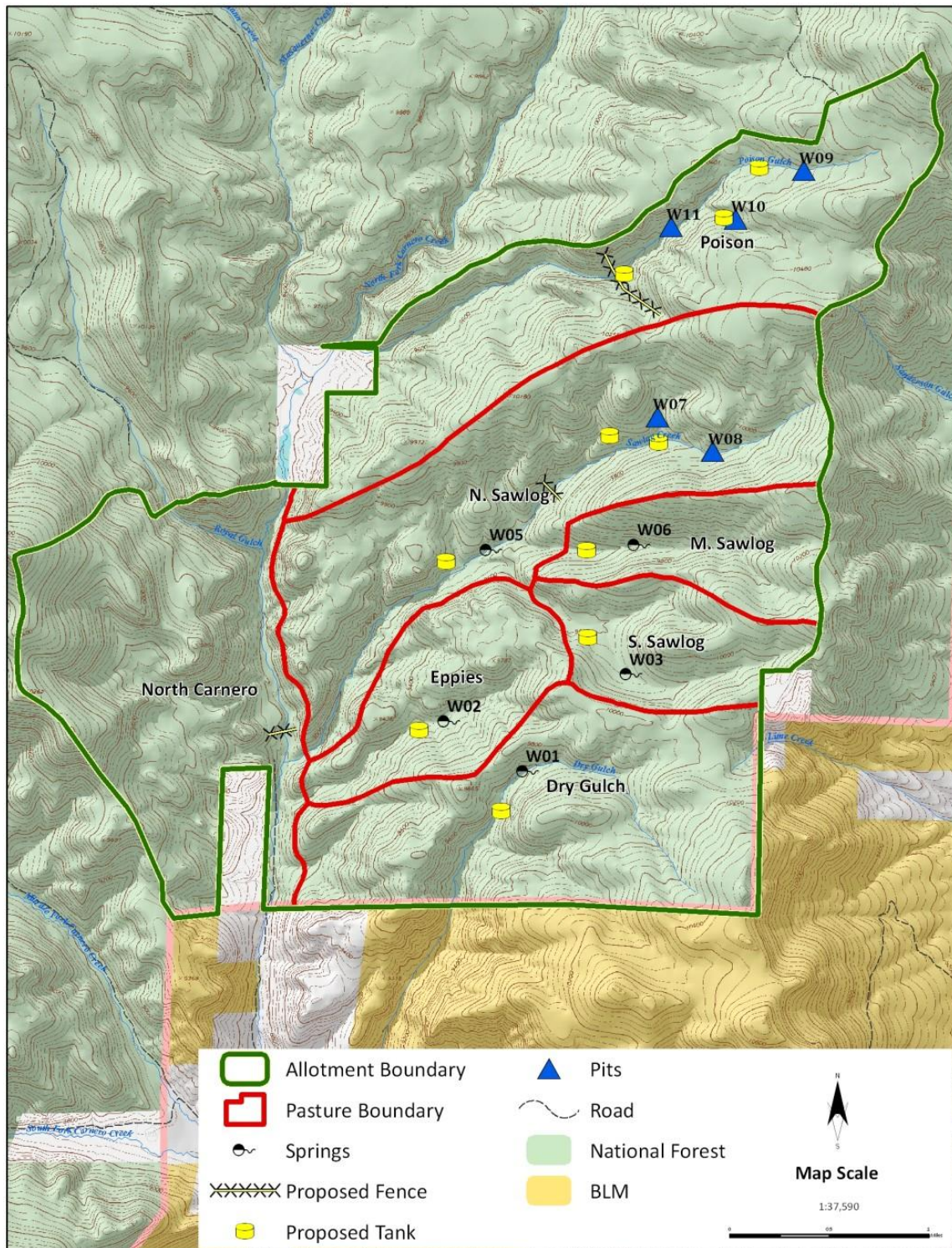
- A drift fence (less than ½ mile) in the North Carnero drainage (T43N, R5E, Section 26 NESW¼).
- A drift fence (approximately ½ mile) in Poison drainage (T43N, R5E, Section 18 SW¼) to divide the pasture into two functional pastures.
- A division fence (approximately 1 mile) in the Sawlog Creek drainage (T43N, R5E, Section 24 NENE¼ and T43N, R6E, Section 19 SW¼) to divide the pasture into two functional pastures.

Proposed water improvement options for the Sawlog Allotment:

- Develop a pipeline along contour from existing spring development W05-Sheep Camp Spring (T43N, R5E, Section 25 NWNE¼) approximately ½ mile to a stock tank.
- Develop a pipeline along contour from existing spring development W01-Dry Gulch Spring (T43N, R5E, Section 36 SWSE¼) approximately ½ mile to a stock tank.
- Develop a pipeline along contour from existing spring development W02-Gilbreath Spring (T43N, R5E, Section 36 NENW¼) approximately ½ mile to a stock tank.
- Develop a pipeline along contour from existing spring development W03-South Sawlog Spring (T43N, R6E, Section 30 SWSE¼) approximately ½ mile to a stock tank.
- Develop a pipeline along contour from existing spring development W06-Middle Sawlog Spring (T43N, R6E, Section 30 SWSE¼) approximately ½ mile to a stock tank.

Many of the stock pits were developed with tanks that are too close to the source and lack of elevation change limits the proper function of the tanks. These tanks need to be relocated further away from the source (within ½ mile). A site-specific evaluation will be conducted to determine where development will be most effective and minimize resource impacts. It is therefore unlikely that all the tanks will be relocated. Existing improvements that require this include:

- W07-Willow Seep (T43N, R6E, Section 19 NENW¼)
- W08-Upper Sawlog (T43N, R6E, Section 19 NWSE¼)
- W09-Upper Poison (T43N, R6E, Section 17 NWNW¼)
- W10-Good Park (T43N, R6E, Section 18 SENE¼)
- W11-Wilson (T43N, R6E, Section 18 SENW¼)



Map 18. Sawlog C&H Allotment proposed improvement locations

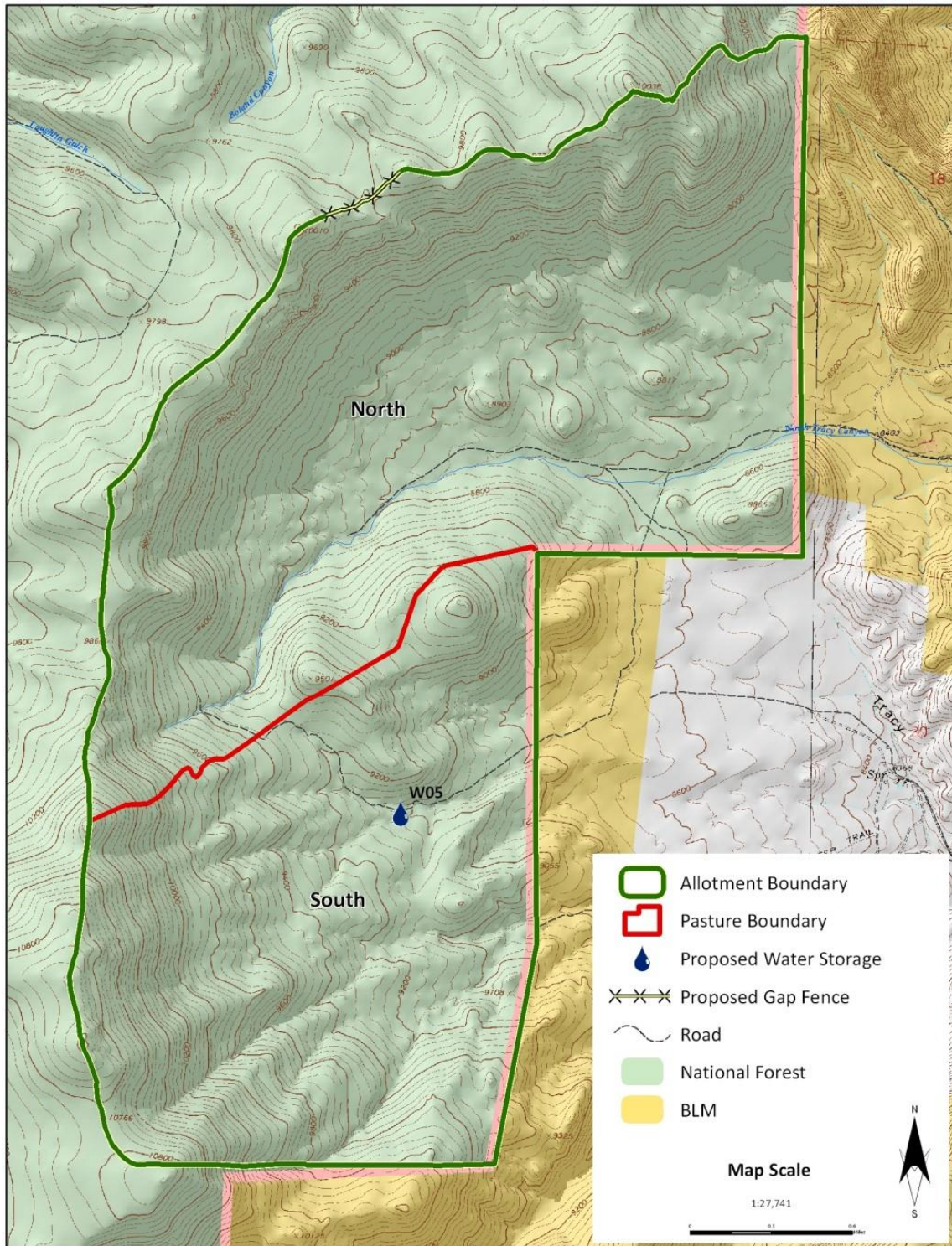
Tracy Canyon Allotment Proposed Improvements

Proposed fence improvement options for the Tracy Canyon Allotment include:

- A gap fence (less than 1 mile), on the Mill Creek Allotment boundary to prevent cattle drift (T44N, R6E, Section 14 NESW¹/₄).

Proposed water improvement options for the Tracy Canyon Allotment:

- Install a storage facility (i.e., bladder bag) at the existing spring development W05-Rock Spring (T44N, R6E, Section 26 NESW¹/₄) to improve dependability of the water from this source.
- Development of a well in the Tracy or North Tracy drainage that would be used in conjunction with adjacent BLM allotments.



Map 19. Tracy Canyon C&H Allotment proposed improvement locations

Appendix D: Detailed Monitoring Schedule by Allotment

Allotment Pasture	Monitoring	Sampling Conducted	Frequency of Sampling
<i>California Gulch</i>			
Cow Camp	Key Area	Utilization	Annually
Hat Springs	Long-term transect (C1)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Grouse Creek	Key Area	Utilization	Annually
Allen Creek	Benchmark (Allen Creek)	Photo point, species composition, percent bare ground	3–5 years
	Key Area	Utilization	Annually
West Park	Long-term transect (C2)	Cover Frequency	5–10 years
	Key Area	Utilization	Annually
<i>Carnero Allotment</i>			
Fullerton	Long-term transect (C3)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Mann	Long-term transects (C1, C2)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Royal	Long-term transect (C5)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Cyclone	Long-term transects (C4)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Squaw	Key Area	Utilization	Annually
Middle Fork	Key Area	Utilization	Annually
	Benchmark (Middle Fork)	Photo points, species composition, percent bare ground	3–5 years
<i>Cave Creek Allotment</i>			
Poso	Long-term transects (C1, C2)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Cave	Long-term transect (C3)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
	Benchmark (Cave Creek)	Photo point, species composition, percent bare ground	3–5 years
Carnero	Key Area	Utilization	Annually
Miners	Key Area	Utilization	Annually
Boot	Long-term transect (C4)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
<i>Cottonwood Allotment</i>			
Ladder	Long-term transect (C2)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Raven Grove	Key Area	Utilization	Annually
	Long-term transect (C3)	Cover frequency	5–10 years
Butterfly	Key Area	Utilization	Annually
Little Cottonwood	Long-term transect (C1)	Cover frequency	5–10 years
	Key Area	Utilization	Annually

Allotment Pasture	Monitoring	Sampling Conducted	Frequency of Sampling
<i>Houselog Allotment</i>			
Big Dry	Long-term transect (C6)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Spring Gulch	Long-term transects (C4, C7)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
	Benchmark (Lower Spring Creek)	Photo point, species composition, percent bare ground	3–5 years
Upper South Park	Long-term transect (C3)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Lower South Park	Long-term transect (C5)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
Oakley	Key Area	Utilization	Annually
Houselog	Long-term transects (C1, C2, C9)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
<i>Mill Creek Allotment</i>			
Mill Creek	Key Area	Utilization	Annually
	Four long-term transects (C1, C2, C3, C4)	Cover frequency	5–10 years
	Benchmark (Mill Creek)	Photo point, species composition, percent bare ground	3–5 years
	Elk enclosure		
	Cattle enclosure		
<i>Pasture Allotment</i>			
Lower	Key Area	Utilization	Annually
West	Key Area	Utilization	Annually
Middle	Key Area	Utilization	Annually
	Long-term transect (C1)	Cover frequency	5–10 years
East	Key Area	Utilization	Annually
	Long-term transect (C2)	Cover frequency	5–10 years
<i>San Juan Maez Allotment</i>			
North Carnero	Long-term transect (C2)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
	Benchmark (North Fork Carnero)	Photo point	3–5 years
Mill Creek	Long-term transect (C3)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
San Juan	Long-term transect (C1)	Cover frequency	5–10 years
	Key Area	Utilization	Annually
<i>Sawlog Allotment</i>			
North Fork Carnero	Key Area	Utilization	Annually
	Benchmark (Lower North Fork Carnero)	Photo point	3–5 years
Eppies	Key Area	Utilization	Annually
Poison	Key Area	Utilization	Annually
	Long-term transect (C1)	Cover frequency	5–10 years
North Fork Sawlog	Key Area	Utilization	Annually
	Long-term transect (C2)	Cover frequency	5–10 years
Middle Fork Sawlog	Key Area	Utilization	Annually
South Fork Sawlog	Key Area	Utilization	Annually
Dry Gulch	Key Area	Utilization	Annually

Allotment Pasture	Monitoring	Sampling Conducted	Frequency of Sampling
	Long-term transect (C3)	Cover frequency	5–10 years
<i>Tracy Canyon Allotment</i>			
North	Key Area	Utilization	Annually
	Long-term transect (C1)	Cover frequency	5-10 years
	Benchmark (Lower North Tracy)	Photo point	3–5 years
South	Key Area	Utilization	Annually

Appendix E: Summary of MIS Selection and Rationale and USFWS Birds of Conservation Concern for BCR 16 for the Analysis Area

Table E-1 summarizes project effects to MIS habitat and the relative impact at the Forest level. Five MIS were evaluated in detail in this section: (1) elk, (2) mule deer, (3) Wilson's warbler, (4) Lincoln's sparrow and (5) vesper sparrow. Table E-2 lists USFWS Birds of Conservation Concern for BCR 16 occurrence in the analysis area, and summarizes anticipated influence of the action alternative(s).

Table F-1. Summary of MIS selection and rationale for the analysis area

MIS	Habitats Represented	Rationale for Selection in Forest Plan	Rationale for Detailed Evaluation for the Analysis Area	Rationale for Dismissal From Detailed Analysis
Brown creeper	Mature to late-successional spruce/fir and mixed conifer (LTAs ¹ 1, 3, 13; Structure Class 5) ²	Species has a very close association with the structural elements that occur under older forest conditions, including large tree diameters and older snag component. Mentioned as a species that may respond to certain threats, management, and conservation activities in spruce/fir forests in the Colorado Bird Conservation Plan (BCP).		Alternatives are not expected to affect mature to late-successional spruce/fir and mixed conifer habitats.
Hermit thrush	Mature to late-successional spruce/fir and mixed conifer (LTAs 1, 3, 13; Structure Class 5)	Species is primarily associated with spruce/fir and is commonly associated with, but not restricted to, older forest structure. Tied to complex structural forest elements. Mentioned as a species that may respond to certain threats, management, and conservation activities in spruce/fir forests in the Colorado Bird Conservation Plan (BCP).		Alternatives are not expected to affect mature to late-successional spruce/fir and mixed conifer habitats.
Elk	Forest-wide (All LTAs)	Special interest locally (i.e., economic and recreational value). Forest generalist but can compete directly with other native ungulates and livestock. Sensitive to roads and related disturbance.	Analysis area provides elk summer and winter habitat. Indicator of overall grazing pressure and related level of disturbance.	
Mule deer	Forest-wide (All LTAs)	Special interest locally (economic and recreational value). A habitat generalist, but is	Analysis area provides mule deer summer and winter habitat. Indicator of forage competition and	

MIS	Habitats Represented	Rationale for Selection in Forest Plan	Rationale for Detailed Evaluation for the Analysis Area	Rationale for Dismissal From Detailed Analysis
		more sensitive to forage quality and availability than elk. Depends heavily on early seral stage vegetation.	quality.	
Rio Grande cutthroat trout	Riparian (LTA 10–Forest-wide aquatic)	Management indicator of the health of montane aquatic ecosystems. Most sensitive of the salmonid species to management activities that increase sediment, reduce stream cover, create barriers to movement, or impact stream flows or water quality.	Core/conservation populations within the project analysis area. Indicator of overall stream health, water quality and stability of stream side vegetation. Will assist in monitoring how grazing activities are affecting overall stream health.	
Pygmy nuthatch	Mature to late-successional ponderosa pine (LTA 5; Structure Class 5)	Cavity nester; timber and/or fire management may affect quantity and/or quality of habitat, including snags; may represent effects to other primary and secondary cavity nesters.		Alternatives are not expected to affect mature to late successional ponderosa pine habitat.
Lincoln's sparrow	Riparian (LTA 10–Willow)	Riparian species tied to different structural elements susceptible to grazing and other activities within riparian areas; monitored as a group with Wilson's warbler due to close habitat associations with willow communities at various elevations.	Populations present within the project analysis area. Indicator of low elevation willow community and riparian habitat health. Will assist in monitoring how grazing activities are affecting willow carrs and riparian vegetation.	
Wilson's warbler	Riparian (LTA 10–Willow)	Riparian species tied to different structural elements susceptible to grazing and other activities within riparian areas; monitored as a group with Lincoln's sparrow due to close habitat associations with willow communities at various elevations.	Populations present within the project analysis area. Indicator of high elevation willow community and riparian habitat health. Will assist in monitoring how grazing activities are affecting willow carrs and riparian vegetation.	
Vesper sparrow	Grasslands (LTAs 8, 9, and 12)	Uses a narrow set of habitat conditions for nesting—sparse or patchily shrubs with abundant grass ground cover; may be affected by grazing activities. Indicator of upland bunchgrass/shrub communities.	Habitat within analysis area. Indicator of upland shrub /bunchgrass community health. Will assist in monitoring upland utilization levels and remaining residuals.	

¹ LTA = Landtype Association (defined in the Forest Plan, page 3-41).

² Structure class (defined in the Forest Plan, page 3-43).

Table E-2. USFWS Birds of Conservation Concern for BCR 16, occurrence in the analysis area, and anticipated influence of the action alternative(s)

Species	General Habitat	Occurrence in Analysis Area	Effect of Alternatives
Northern Harrier	Grasslands	No	Evaluated as an Region 2 sensitive species; No Effect (Insufficient habitat present)
Swainson's Hawk	Grasslands	No	No Effect (insufficient habitat present)
Ferruginous Hawk	Prairie	No	Evaluated as an Region 2 sensitive species; No Effect (No habitat present)
Golden Eagle	Cliffs/grasslands	Yes	No Effect; livestock grazing is not expected to affect this species
Peregrine Falcon	Cliffs	Yes	Evaluated as an Region 2 sensitive species; No Effect; livestock grazing is not expected to affect this species
Prairie Falcon	Cliffs	Possible	No Effect; livestock grazing is not expected to affect this species
Gunnison Sage-grouse	Sagebrush	No	Evaluated as an Region 2 sensitive species; No Effect (no habitat present)
Snowy Plover	Shorelines	No	No Effect (no habitat present)
Mountain Plover	Prairie	No	Evaluated as an Region 2 sensitive species; No Effect (no habitat present)
Solitary Sandpiper	Shorelines	No	No Effect (no habitat present)
Marbled Godwit	Wetlands	No	No Effect (no habitat present)
Wilson's Phalarope	Water bodies/shorelines	No	No Effect (no habitat present)
Yellow-billed Cuckoo	Deciduous riparian	No	Evaluated as an Region 2 sensitive species; No Effect (species not present)
Flammulated Owl	Ponderosa pine/snags	Possible	Evaluated as an Region 2 sensitive species; No Effect; livestock grazing is not expected to affect this species
Burrowing Owl	Plains/grasslands	No	No Effect (no habitat present)
Short-eared Owl	Parks/grasslands	No	No Effect (species not present)
Black Swift	Waterfalls/wet cliffs	No	No Effect (no habitat present)
Lewis's Woodpecker	Riparian cottonwood and ponderosa pine	Possible	Evaluated as an Region 2 sensitive species; No Effect; livestock grazing is not expected to affect this species
Williamson's Sapsucker	Montane forests/snags	Possible	No Effect; livestock grazing is not expected to affect this species
Gray Vireo	Oak woodlands/scrub	No	No Effect; (no habitat present)
Pinyon Jay	Pinyon/juniper	Yes	No Effect; livestock grazing is not expected to affect this species
Bendire's Thrasher	Rare species of arid areas	No	No Effect; (no habitat present)
Crissal Thrasher	No records in CO	No	No Effect; (no habitat present)
Sprague's Pipit	No records in CO	No	No Effect; (no habitat present)
Virginia's Warbler	Riparian scrub	Possible	May effect; livestock grazing may damage habitat and/or nests
Black-throated Gray Warbler	Oak scrub/riparian	No	No Effect; (no habitat present)
Grace's warbler	Ponderosa pine	Possible	No Effect; livestock grazing is not expected to affect this species
Sage Sparrow	Sagebrush	No	No Effect; (insufficient habitat present)
Chestnut-collared Longspur	Plains	No	Evaluated as an Region 2 sensitive species; No Effect (no habitat present)

Appendix F: Social Demographics

Introduction

This appendix briefly summarizes the demographic characteristics of the people who live in the towns and counties of this area, recent patterns of demographic change, occupation, industry and employment, cultural patterns, and the general size and level of activity for association, organizations, and local government. The general role and position of groups of ranchers who hold Forest Service grazing permits in the San Luis Valley (SLV) communities are described next.

Social Assessment for the SLV

The communities of the SLV are experiencing notable changes in population growth and in the nature of their economics. Using U.S. Census data from the past six decades, including the 2000 Census (Colorado State Demography Office 2008), gives an indication of the population trends within each county in the SLV (see Final Environmental Impact Statement [hereafter referred to as FEIS] for the Forest Plan, page 3-366, figure 3-67) (USDA Forest Service 1996)). The figure from the FEIS shows that the SLV's population steadily decreased through the 1950s and 1960s to a low point in the 1970 Census. Since the 1970s, the SLV's population has increased. Approximately a 10 percent increase occurred in the last two decades, yet the current population level is still below the 1950 level. In contrast, the State's population has increased almost 250 percent during the past five decades, with a 13.2 percent increase in the past decade.

From 1980 to 1990, the SLV's population increased, with most counties showing an increase. The exceptions are Conejos County with a 341-person decline and Mineral County with a 246-person decline. The drop in the Mineral County population was due to the closure of the Homestake Silver Mine. From 1990 to 2000 the SLV population increased in all counties. The largest increases were in Mineral (+4 percent) and Saguache County (+2.5 percent).

The U.S. Census Bureau projects growth in Colorado to increase by nearly 2 percent per year in the next three decades. The growth increase will probably occur along the Front Range, I-70 corridor, Gunnison/Delta corridor, and the Four-corners region. This growth will most likely come from in-migration of people from the south and southwest regions of the nation.

Growth projections for the SLV indicate a positive, but smaller rate of growth as that projected for the State over the same period of time. Projections indicate a 1 percent increase per year for the next three decades. This will bring the population of the SLV up to its 1950 level in 5 to 10 years. The SLV's growth will also be caused from in-migration from the south and southwest regions of the nation. These people may bring with them different values, expectations and needs than the current populace.

These changes are important because these demographic movements are changing the communities of this area, which include Alamosa, Monte Vista, South Fork, Creede, Del Norte, Saguache, San Luis, Ft. Garland/Blanca, Antonito, La Jara, Sanford, and Manassa/Romeo, and the roles and relative position of ranchers and ranching-based agriculture in the communities. In the towns which are experiencing population growth, ranchers are slowly becoming a smaller fraction of the community, and the communities are becoming more socially diverse as a whole. In the towns and rural areas that are shrinking in population, ranchers are becoming a more significant factor in the community. Many of the historic ranches within the SLV have been

subdivided for summer homes. Efforts within the SLV by several individuals and groups have been undertaken to develop conservation easements to preserve as much of the remaining privately owned ranches as possible.

The economy of the communities in this area (and generally the Rocky Mountain and Northern Great Plains regions as well) was based on mining, agriculture (including ranching) and military operations from the 1850s to the 1950s. That is, people who engaged in mining and agriculture generally exported their products out of the region. These exports brought outside dollars back into the regions, and allowed people earning them to buy goods and services they needed from within the region. In essence, these outside dollars formed the foundation of the economy; other people were able to settle here only because they could provide goods and services to people working in the base industries. Over time, each community developed an economy consisting of many layers, but the base industries continued to be those which exported goods or services to other regions.

Sometime in the 1950s, the base export industries of the region began to change to include a significant amount of tourism and recreation. That is, visitors earned their dollars in other regions, but came to these regions to spend them.

As a result, many towns in Colorado, Yellowstone National Park area in Wyoming, and the Black Hills of South Dakota began to diversify, while other towns in the region continued with ranching as a significant portion of their base export industry. In the SLV, Alamosa, Monte Vista, and South Fork have diversified economies that include traditional and newer industries (such as telecommunications, four-season resorts, light manufacturing, and secondary or tertiary health care), while the towns of Del Norte, Saguache, Ft. Garland, San Luis, Antonito, La Jara, and Manassa/Romeo have economies still generally focused on ranching and agriculture.

In some of the SLV communities whose population is shrinking, ranching is becoming the remaining primary economic activity. But the structure of the economy in these areas is changing significantly. Merchants who provide the ranchers with goods and services are relocating to larger towns with larger potential for customer bases. So economies (Saguache, La Jara, Manassa/Romeo, and Antonito) may be more sensitive to changes in Forest Service permits.

Cultural patterns also are an important facet of the communities in these areas. “Culture” generally refers to ways of thought and life, and to the social identities people develop in certain communities. Most people belong to or adopt a culture as they mature, and will work hard to preserve the community culture and pass it along to their children.

In the SLV, some communities have strong traditional cultures (often based on ranching/or agriculture in particular), while others are beginning to experience significant change under impact of immigrants with different values, social norms, and attitudes toward land and the environment. In general, the cultures of communities with strong ties to ranching and agriculture are fairly robust. A common observation for the mountain and plains States areas is that immigrants to these areas often adopt part or all of the set of local cultural mores within a generation. Only truly significant numbers of immigrants or relatively complete withering away of the population of small towns appears to bring about much cultural change in these communities.

Social associations and organizations are an important part of community and cultural life in this area, particularly in rural areas. The important formal and informal associations which tie

together people of diverse backgrounds, occupations, and cultures are the various grazing associations (e.g., Cumbres, Saguache Park, Conejos Canyon, and Meyers Creek), special interest and civic groups (e.g., People for the West and Rotary Club), and religious organizations (e.g., the Catholic Church and The Church of Jesus Christ of Latter-Day Saints).

We have paid particular attention to the groups of vulnerable people in these communities. The 2000 census information indicates the racial composition of the six-county region of the San Luis Valley as White, 78 percent; American Indians, 9.2 percent; Asian, 0.5 percent; Black, 0.2 percent; and other Race, 12.1 percent.

According to the U.S. Census, persons of Hispanic origin may be of any race. Origin is viewed as the ancestry, nationality group, lineage, or country of birth of a person or their relatives before arrival in the United States.

In the 2000 U.S. Census, people of Hispanic origin included Mexicans, Puerto Ricans, South and Central Americans, and Spaniards. The census also included Native Indians from those same lands.

For the six-county region of the San Luis Valley, the 2000 U.S. Census reported approximately 45 percent of the residents were of Hispanic origin. Further review of the census data reveal that the percentage of people of Hispanic origin varies greatly, from Mineral County's 2 percent to Costilla County's 68 percent.

The per capita personal income level is one indicator of the overall wealth and health of the local economy. It is calculated by taking the total personal income from an area and dividing the income by the estimated July 1 resident population.

The agriculture and service sectors are predominant in the SLV, and generally do not have high wages, before deductions for personal income taxes. Per capita income for the SLV counties is well below the State average (USDA Forest Service 1996).

There is a high level of dependency on the Forest by SLV residents for subsistence. Because of high unemployment, low per capita income, and strong multi-generational tie to the region, the RGNF is used extensively as a source of fuel and food. Hunting, fishing, trapping, and firewood gathering are important uses of the Forest by local residents. These are very difficult to quantify and qualify.

SLV County-by-County Descriptions

Alamosa County contains the city of Alamosa, the largest community in the SLV and a regional trade center. Service and manufacturing companies are their largest employers along with retail trade and government (Federal, State, county, and local). According to the 2000 Census data, Alamosa County has a population of 14,966 residents.

Conejos County contains the communities of La Jara, Manassa/Romeo, Antonito, Sanford, and Capulin and is the third most populated county in the SLV with 8,400 residents. Ranching, farming, and tourism are the major industries. The majority of the Forest Service livestock permittees live in Conejos County.

Costilla County lies on the eastern end of the SLV and contains the communities of Blanca, Ft. Garland, and San Luis. It is the second least populated county in the SLV with 3,663 residents. Ranching, agriculture, and gold mining are the major industries.

Mineral County contains the community of Creede and the least populated county in the SLV with 831 residents. Real estate and tourism account for the majority of the economy in this county.

Rio Grande County contains the communities of Monte Vista, Del Norte, South Fork, and is the second most populated county in the SLV with 12,413 residents. These communities are located along US 160 and rely heavily on the tourism industry. Other important contributors to the local economy include, ranching, agriculture, government, services-oriented industry, and timber. Rio Grande County has the largest livestock auction barn in the region.

Saguache County contains the communities of Saguache, Moffat, Villa Grove, and Center and has a population of 5,917 residents. The leading occupations are ranching agriculture, timber, and tourism.

Environmental Justice

Table D-1. Environmental justice statistics for counties in the San Luis Valley, Colorado

State/ County	2000 Pop- ulation	Percent Black or African American	Percent American Indian, Alaska Native	Percent Asian, Native Hawaiian, Other Pacific Islander	Percent Some Other Race	Percent Two or More Races	Percent Hispanic or Latino, Any Race	Percent Below Poverty Level	Percent Heat With Wood
Colorado	4,301,261	3.7	0.7	2.3	0.1	2.8	17.1	9.3	1.0
Alamosa	14,966	1.0	2.3	1.0	20.3	4.2	41.4	21.3	5.3
Conejos	8,400	0.2	1.7	0.2	6.3.1 21.5	6.3.2 3.6	6.3.3 58.9	6.3.4 23.0	6.3.5 11.1
Costilla	3,663	0.8	2.5	1.1	29.5	5.2	67.6	26.8	12.2
Mineral	831	0.0	0.8	0.0	0.1	2.2	2.0	10.2	19.4
Rio Grande	12,413	0.3	1.3	0.2	21.4	2.8	41.7	14.5	6.9
Saguache	5,917	0.1	2.1	0.5	23.0	3.1	45.3	22.6	7.6

Source: US Census Bureau, 2000 Census.